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The effects of physiotherapy for female urinary incontinence: individual compared with group treatment

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Objectives To compare, in a randomized trial, the effects of individual and group physiotherapy for urinary incontinence in women referred by their general practitioner (GP).

Patients and methods The study included women of all ages (mean 47.8 years) with stress, urge or mixed incontinence; 126 received individual and 404 group treatment. Both groups undertook the same pelvic floor exercises and bladder training, and received the same information. The effects were measured soon after treatment and again 9 months later. The main outcome measures were objective changes in the severity of incontinence, frequency of urine loss and frequency of nocturnal urine loss. The trial was nationwide; 25 physiotherapists and 337 GPs participated.

Results There were no significant differences in effect between the groups; after individual treatment the severity of incontinence improved in 60% of the patients and the mean (95% confidence interval, CI) frequency of urine loss decreased, by −8.7 (−6.4 to −11.1) times/week. After group therapy continence improved in 57% and the frequency of urine loss decreased, by − 8.4 (−6.8 to−10.0) times/week. For women who had nocturnal urine loss (at baseline), the frequency decreased after individual treatment by −11.2 (4 to−26.4) and after group therapy by −14 (−9.1 to −18.9) times/month. All improvements persisted in full for up to 9 months.

Conclusion Individual and group physiotherapy are equally effective for at least 9 months in improving incontinence in women. Factors should be sought that can predict the effectiveness of therapy, and thus better select those patients most likely to benefit from therapy.

Keywords urinary incontinence, physiotherapy, group therapy, randomized trial, outcome

Introduction

Urinary incontinence (UI) in women is a common condition that can have a major effect on their quality of life. The estimated prevalence of UI in women is 15–25% [1–4]. A substantial component of the symptoms results from insufficient pelvic floor muscle tone or a hyper-reactive bladder. Spontaneous recovery is rare, as several studies (with control groups) show [5–9]. Treatment with pelvic floor exercises and bladder training can cure or improve the condition; individual instructions administered in general practice are successful [7,9–11]. Treatment by a specialized physiotherapist potentially produces better results than instruction by a GP, because patients can then practice more intensively under supervision. Physiotherapy methods vary, including approaches with or without appliances (biofeedback, electrostimulation, vaginal cones), and the duration and frequency of therapeutic sessions also differ. Studies of several methods showed positive effects but were restricted to a few patients and were not comparable with each other [5,6]. A relatively new treatment is group therapy [12], presumed to have additional benefits, as group members would support each other and strengthen their motivation to exercise. To date, the results of group therapy have not been assessed; thus the present study compared the effects of group with individual therapy in women with UI, assessing the effects on the severity and extent of urine loss.

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Patients and methods

The study included women who presented with UI in general practice in the Netherlands. The type of incontinence was diagnosed by the GP according to a strict protocol [13]. This protocol and the Dutch College Guidelines on Urinary Incontinence, established later, corresponded closely [14]; both were based on the same data [7–9]. The main inclusion criterion was that women had stress, urge or mixed incontinence. Incontinence was

defined as the involuntary loss of urine at least twice a month. Patients were excluded if there was a neurological cause for their incontinence, a tumour or infection in the pelvis, severe vaginal prolapse or if the symptoms were temporary. Patients who were included were assessed by their GP to determine whether they were sufficiently motivated to follow a training programme; if so, they were referred to the physiotherapist. The physiotherapist then assessed if the patients were eligible for either of the two interventions and were prepared to follow the assigned treatment. Patients gave informed consent. Twenty-five female physiotherapists took part in the study; all followed the same course and administered the individual and group therapy. All GPs in the regions where the physiotherapists worked received written information about the project and 337 participated. The first treatment was given in February 1995 and the last completed a year later.

Both treatments were administered using a standard detailed protocol and were comparable for the exercises and information given. Patients were asked to exercise at home five times daily, with more and longer contractions each time they exercised. Later, the goal was twice daily with exercise during 'waiting' moments. Women who frequently voided were also taught to delay voiding and increase the interval between successive voids. Both treatments were continued for 3 months. Group therapy consisted of nine 2-h sessions, with each group comprising 8–10 patients. The individual treatment consisted of 11 30-min sessions.

The study design was a 12-month randomized intervention trial with two intervention groups, i.e. individual and group treatment. Measurements were made just before, immediately after and 9 months after treatment. For the baseline measurement patients were unaware of the intervention they would receive. To exclude chance effects caused by group differences, at least 35 groups were recruited. The period between recruitment and treatment varied because the treatment could not start before 15 women had been recruited. When 13 women (plus two reserves) were enrolled by one physiotherapist, three women were assigned to individual and 10 to group treatment. The participants were randomized by the researchers using frequency-sampling, which guaranteed an equal division of important variables between the groups. The variables chosen were type, severity and duration of incontinence, age and whether or not the patient was exercising already. Within these five variables two hierarchical levels were distinguished; the highest referred to type and severity of incontinence. Subsequently, when these were equally divided over individual and group treatment, the other three were randomized. Because of the gradual recruitment of groups of 13 patients, each randomization was cumulative and determined using a computer program.

As noted, incontinence was diagnosed by the GP [14]. The physiotherapists then provided basic information and analyses of lost patients (intake form). For all measurements, the data were collected using written questionnaires and diaries [15]. During treatment the patients completed exercise forms. The variables analysed were:

(i) Objective outcome measures, i.e. the frequency of urine loss, recorded in their diaries by the patients as the episodes of urine loss during one week and over one day; the severity of incontinence, assessed using four indices in the questionnaires (Table 1), and from the total scores, divided into mild, moderate and severe; the frequency of nocturnal urine loss, where patients who reported incontinence at night recorded (in the questionnaires) how many times each month this occurred.

(ii) Subjective outcome measure; the self-perceived change of urine loss was reported by the patients as a improvement, deterioration or no change in urine loss compared with the baseline.

(iii) Compliance; the frequency and quality of exercise during treatment was obtained from the exercise forms, where patients recorded daily how many times they exercised ('once' meaning a cluster of exercises) and how the exercising fared (very well, well, fairly well, badly, very badly); the frequency of exercise after treatment, where patients were asked 9 months after treatment how often they had exercised during the past 3 months (not at

Table 1 The system for scoring the severity of incontinence

Variable	*Score*
Frequency of urine loss	
3–4 times/month	1
a few times a week	2
daily	3
Use of protective pads or garments because of incontinence	
none	1
only occasionally	2
most of the time	3
Amount of urine loss	
a few drops	1
a little	2
a lot	3
Restrictions in daily activities caused by incontinence	
none	1
some	2
many	3
Level (severity) of incontinence (total score)	
mild	4–6
moderate	7–9
severe	10–12

all, less than once a week, once or twice a week, more than twice a week, daily, and several times a day).

Statistical analysis

Baseline values (of possible confounders) between the study groups were compared using two-sample *t*-tests, Mann–Whitney tests or χ^2 tests, as appropriate. To compare changes from baseline between the study groups change-scores (assessment time minus baseline) were tested using two-sample *t*-tests and Mann–Whitney tests. The paired *t*-test and the Wilcoxon matched-pairs signed-ranks test were used to analyse changes over time within each group. All tests of significance were two-tailed and based on an alpha of 0.05. The analysis was conducted on an 'intention-to-treat' basis.

Results

Of the 703 women who were referred to the physiotherapist for recruitment, 530 were randomized to a treatment; 126 received individual and 404 group therapy (Fig. 1). There were no differences between these 530 patients and the 173 women who were not randomized in age, education, type and severity of incontinence. In both study groups 7.9% of the patients did not start or stopped treatment. There were no significant differences between patients lost in both groups in the type, severity and duration of incontinence, age and existing exercise practice. Lost patients were also contacted at the other assessment times and the response then was no different between the groups. In total, 414 women completed the trial and they had no significant differences from the group originally randomized. The study groups were comparable for background characteristics and variables that could have affected the results of treatment when treatment started (Table 2). The mean age of the patients was ≈ 48 years, 60% had genuine stress incontinence and almost half had been incontinent for >5 years.

There were no significant objective differences in effect between individual and group therapy, at either assessment. The decreased frequency of weekly urine loss (more than halved) did not differ between the groups (Table 3) and there were no significant differences between the

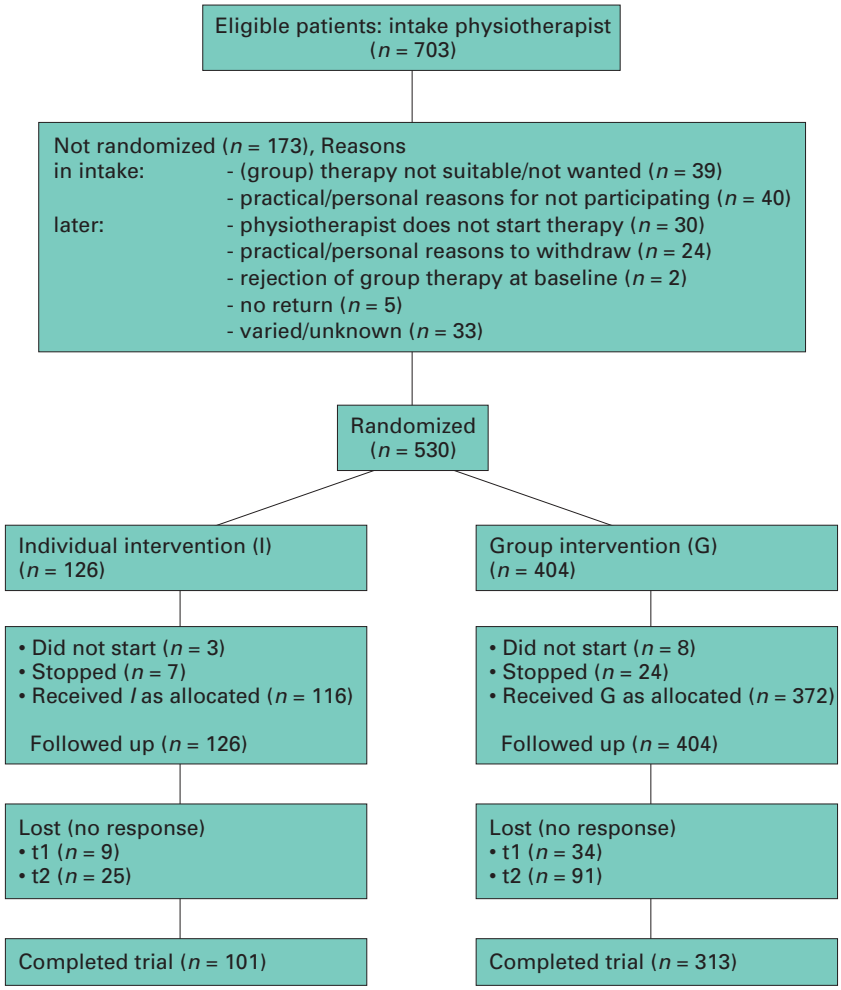

Fig. 1. A flow chart showing the recruitment, randomization and loss of patients from the trial.

Table 2 Baseline comparisons between the groups for demographic, medical and health behaviour characteristics ($n=414$). Values are percentages unless stated otherwise

	Therapy	
Characteristic	*Individual*	*Group*
No. of patients	101	313
Mean (SD) age (years)	47.8 (11.0)	47.8 (10.4)
Married	83	88
Paid job	38	43
Level of education		
low	41	35
middle	41	45
high	18	20
Type of incontinence		
genuine stress	58	61
urge	10	7
mixed	32	32
Severity of incontinence		
mild	19	13
moderate	66	69
severe	15	18
Duration of incontinence, years		
<1	15	12
1–3	23	21
3–5	16	19
>5	47	48
Bladder operation	9	13
Uterus extirpated	16	18
(Mild) vaginal prolapse	27	32
>1 year not menstruated	42	34
Been pregnant	95	96
Mean (SD) parity	2.2 (1.2)	2.3 (1.2)
Use contraceptive pill	16	11
Use cervical cap/diaphragm	5	3
Oestrogen supplement	7	10
Obesity (Quetelet index >30)	9	7
Learned PFE before	52	53
because of urine loss	28	22
exercised >twice/week in last 3 months	13	16
Had bladder training before	5	5

groups at either assessment in the subjective outcome (not shown). Immediately after treatment 94% of those receiving individual therapy and 86% of those receiving group therapy felt their incontinence had been improved from the baseline; at 9 months these values were 85% and 78%, respectively.

Table 4 shows the significant objective improvements in both groups (except for nocturnal urine loss immediately after individual treatment); these improvements continued to 9 months. Compared with baseline, both groups had less than half the frequency of urine loss, and the same applied for nocturnal urine loss.

There were no differences in compliance between the groups (Table 5). During therapy, patients exercised a mean of 2.6 times/day and the quality of the exercises was similar (between 'good' and 'fairly good'). At 9 months the frequency of exercise was also comparable.

Discussion

The results of this trial indicate that individual and group physiotherapy do not differ in their effects on the severity and extent of involuntary urine loss in women. Both therapies are equally successful and the improvement remains at the same level after 9 months. The women clearly learned to manage their incontinence. To our knowledge there are no previous reports showing that group physiotherapy and the individual approach are equally effective. The initial expectation that group treatment would have added benefits and be more effective was not supported. We presume that both treatments were of the same quality and have particular advantages, e.g. the potential to adapt to personal circumstances are greater in individual therapy, but for group treatment the total duration of therapy is longer. However, this could also be a disadvantage, as patients need spare time to exercise at home. Nevertheless there were no differences in compliance between the groups. Given that these two therapies are equivalent, the options

Table 3 Objective outcome measures of urine loss for the two groups at baseline, immediately after and 9 months after treatment

	Individual therapy			*Group therapy*		
Measure	*Baseline*	*Immediate*	*9 months*	*Baseline*	*Immediate*	*9 months*
Severity of incontinence (% in category)						
dry	-	20	22	-	13	14
mild	19	43	42	13	48	44
moderate	66	32	29	69	36	37
severe	15	5	7	18	3	5
Mean (SD) number of times						
of urine loss/week	16.3 (15.8)	7.3 (12.0)	8.6 (15.5)	14.4 (15.3)	6.0 (9.3)	6.1 (10.5)
of nocturnal loss/month (in those with loss at baseline)	20.8 (19.6)	8.3 (17.7)	2.5 (8.7)	21.6 (18.4)	7.7 (17.0)	6.1 (12.2)

Table 4 The change score from baseline for the objective outcome measures of urine loss for the two groups

	Individual therapy		*Group therapy*	
Measure	*Immediate*	*9 months*	*Immediate*	*9 months*
Severity of incontinence (% in category)				
less severe than at baseline	60†	60†	57†	56†
unchanged	39	37	41	42
more severe than at baseline	1	3	2	2
Mean (SD) change-score from baseline	−0.8 (0.7)	−0.8 (0.9)	−0.7 (0.8)	−0.7 (0.8)
Mean (SD) [95% CI] change score:				
No. of times of urine loss/week	−8.7 (11.8)† [−6.4,–11.1]	−7.4 (14.3)† [−4.5,–10.3]	−8.4 (14.2)† [−6.8,–10.0]	−8.2 (15.0)† [−6.5,–9.9]
Nocturnal urine loss/month	−11.2 (25.1) [4.0,−26.4]	−15.5 (18.2)* [−3.9,–27.1]	−14.0 (18.6)† [−9.3,–20.1]	−14.7 (20.0)† [−9.1,–18.9]

* $P < 0.01$; † $P < 0.001$. A negative change-score means an improvement. A mean change-score of −1 for severity of incontinence means that there is an improvement of one rank on average.

for patients and physiotherapists are greater, although individual therapy is more easily available. One disadvantage of offering group treatment is that sufficient patients must be enrolled within an acceptable period.

The present results agree with the outcome reported in other studies, which show considerable benefit from pelvic floor exercises [5–11]. The magnitude of the effects, objective and subjective, is comparable with that reported for studies where the treatment was administered by the GP [7,9,10]. For several reasons not all GPs can instruct their patients and reference to a specialized physiotherapist is then a suitable alternative.

The reliability of the present diaries and exercise schemes was ensured by the physiotherapists and researchers; they emphasized to the patients that it was important for these instruments to be completed meticulously, and attention was given to make the instruments manageable. The high response rate, elaborate explanations from patients and telephoned questions when something was not clear, support the view that most women were conscientious. Moreover, the results derived from the diaries agreed with those derived from the questionnaires. Earlier studies reported reliable results when using diaries [7,16].

Table 5 The reported exercising frequencies by the groups

	Therapy	
Variable	*Individual*	*Group*
No. of patients	101	313
Exercising during therapy period:		
Mean (SD)		
frequency/day	2.6 (1.0)	2.6 (1.1)
quality score*	2.4 (0.4)	2.5 (0.4)
Exercising during last 3 months (assessed at 9 months), %		
not, rarely	21	25
sometimes (1–2/week)	30	29
regular (not each day)	28	23
often (each day) or very often	22	24
Subjective judgement of exercise behaviour, %		
should exercise more often	53	60
exercise sufficiently, if needed	47	40

* 1, very good; 2, good; 3, fairly good; 4, bad; 5, very bad.

Whether the present results can be generalized to other patients is open to debate. One of the inclusion criteria was that patients had to be motivated to exercise and follow a training regimen. Some patients presented to their GP professing an interest in therapy after a recruitment campaign. Because such positive motivation was a selection criterion, the general applicability of the results may be limited. However, for the study of differences between intervention groups, as in the present case, such selectivity is probably of little significance.

In conclusion, individual and group physiotherapy appear to be equally effective in improving urinary incontinence in women for at least 9 months after treatment; the severity of incontinence was decreased in ≈ 60% of the patients. However, because many women had no improvement after treatment, it would be useful to investigate factors that could be used to predict the success of therapy, to better select patients who might benefit most. Studies of the long-term effectiveness of therapy show that success diminished after 5 years, although incontinence remained less severe than at baseline [17,18]. A longer term follow-up of the present patients might provide more information on the decline of effectiveness with time.

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