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Research

A behavioural intervention increases physical activity in people with subacute spinal cord injury: a randomised trial

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KEY WORDS

Spinal cord injury
Motor activity
Behaviour modification
Physical activity
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ABSTRACT

Questions: For people with subacute spinal cord injury, does rehabilitation that is reinforced with the addition of a behavioural intervention to promote physical activity lead to a more active lifestyle than rehabilitation alone? **Design:** Randomised, controlled trial with concealed allocation, intention-to-treat analysis, and blinded assessors. **Participants:** Forty-five adults with subacute spinal cord injury who were undergoing inpatient rehabilitation and were dependent on a manual wheelchair. The spinal cord injuries were characterised as: tetraplegia 33%; motor complete 62%; mean time since injury 150 days (SD 74). **Intervention:** All participants received regular rehabilitation, including handcycle training. Only the experimental group received a behavioural intervention promoting an active lifestyle after discharge. This intervention involved 13 individual sessions delivered by a coach who was trained in motivational interviewing; it began 2 months before and ended 6 months after discharge from inpatient rehabilitation. **Outcome measures:** The primary outcome was physical activity, which was objectively measured with an accelerometer-based activity monitor 2 months before discharge, at discharge, and 6 and 12 months after discharge from inpatient rehabilitation. The accelerometry data were analysed as total wheeled physical activity, sedentary time and motility. Self-reported physical activity was a secondary outcome. **Results:** The behavioural intervention significantly increased wheeled physical activity (overall between-group difference from generalised estimating equation 21 minutes per day, 95% CI 8 to 35). This difference was evident 6 months after discharge (28 minutes per day, 95% CI 8 to 48) and maintained at 12 months after discharge (25 minutes per day, 95% CI 1 to 50). No significant intervention effect was found for sedentary time or motility. Self-reported physical activity also significantly improved. **Conclusion:** The behavioural intervention was effective in eliciting a behavioural change toward a more active lifestyle among people with subacute spinal cord injury. **Trial registration:** NTR2424. **[Nooijen CFJ, Stam H, Bergen MP, Bongers-Janssen HMH, Valent L, van Langeveld S, Twisk J, Act-Active Research Group, van den Berg-Emons RJG (2016) A behavioural intervention increases physical activity in people with subacute spinal cord injury: a randomised trial. *Journal of Physiotherapy* 62: 35–41]**

Introduction

People with spinal cord injury (SCI) receiving inpatient rehabilitation are physically active during therapy sessions. However, after discharge from inpatient rehabilitation, daily physical activity levels are known to decline to a level that is severely low compared with the general population and also low compared with people with other chronic diseases.[1,2] In addition to maintaining sufficient physical activity, interposing of breaks in sedentary time is another independent aspect of physical behaviour that is thought to be important for optimal health.[3,4] For people with SCI, increasing the amount of physical activity is known to: reduce the risk of cardiovascular disease; prevent or reduce secondary health problems, such as pressure areas; and improve physical fitness and quality of life.[5,6] Thus, it is important to prevent a decline in physical activity levels and promote an active lifestyle in the home situation of people with subacute SCI.

Physical capacity can be regarded as a prerequisite for an active lifestyle. Higher physical capacity may allow individuals to perform activities in daily life more proficiently, faster, with less difficulty and for longer periods.[7] Nevertheless, people with SCI often have poor physical capacity.[8] In recent years, it has become increasingly recommended that the highest possible level of physical capacity is attained during inpatient rehabilitation.[5,9] However, higher physical capacity may not automatically lead to a more active lifestyle; a behavioural change may also be needed.[10]

Behavioural interventions are thought to be necessary to achieve a change in behaviour. Previous studies of people with SCI have tended to show positive effects of behavioural interventions on physical activity.[11–16] However, all of those studies were performed

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on people with SCI in the chronic phase. Furthermore, only one study[13] used objective measures of physical activity; the others used self-reported measures, which might have permitted bias.[17] Moreover, only two of six studies[14,15] reported on the long-term effects, which was a limitation because the new behaviour will only be clinically relevant if it is maintained after the intervention.

In the present study, it was hypothesised that regular rehabilitation including a physical exercise intervention reinforced with the addition of a behavioural intervention to promote physical activity would lead to a more active lifestyle than regular rehabilitation including a physical exercise intervention. Therefore, the primary objective of the study was to determine the effect of adding the behavioural intervention on physical activity. A secondary objective was to determine the effects on physical capacity, health, participation and quality of life; these outcomes will be reported in a separate publication.

Therefore, the research question for this randomised, controlled trial was:

> For people with subacute SCI, does rehabilitation that is reinforced with the addition of a behavioural intervention to promote physical activity lead to a more active lifestyle than rehabilitation alone?

Method

Design

This study, named Act-Active, was a single-blind, multicentre, randomised, controlled trial with blinding of the research assistants who performed the measurements. The first author randomised the participants to an intervention group or a control group by a concealed allocation procedure. Randomisation was stratified by level of injury (tetraplegia versus paraplegia) and completeness of injury (motor complete versus motor incomplete). A lesion between C5 and T1 was defined as tetraplegia, and a lesion below T1 as paraplegia. A motor complete lesion was defined as AIS grade A or B, a motor incomplete lesion as AIS grade C or D.[18] Block randomisation was by a computer-generated random number list prepared by an investigator with no clinical involvement in the trial. Random group allocation (1:1) was performed for each rehabilitation centre and within each stratum.

Participants, therapists and centres

Research assistants at rehabilitation centres with specialised SCI units enrolled participants during inpatient rehabilitation. Inclusion criteria were: diagnosed with SCI, initial inpatient rehabilitation, dependent on a manual wheelchair, able to handcycle, and aged between 18 and 65 years old. Exclusion criteria were: insufficient comprehension of the Dutch language to understand the purpose of the study and its testing methods, and progressive disease or a psychiatric condition that could interfere with participation. The usual staff at the specialised rehabilitation centres administered the rehabilitation. The behavioural intervention was delivered by a physiotherapist or occupational therapist trained in motivational interviewing. The four Dutch rehabilitation centres that were involved were: Rijndam Rehabilitation Institute in Rotterdam, Adelante in Hoensbroek, Heliomare in Wijk aan Zee, and Hoogstraat in Utrecht.

Intervention

All participants in both groups received usual care, which included a handcycle training program and advice on physical activity after discharge. The structured handcycle training program was performed during the last 8 weeks of inpatient rehabilitation. This handcycle training was scheduled three times per week and consisted of an interval training protocol on an add-on handcycle. Details of the handcycle training and results on physical capacity have been described elsewhere.[19] The advice about physical activity after discharge was unstructured and focused mainly on sports and not on daily activities. After inpatient rehabilitation, all participants continued rehabilitation as outpatients.

Participants in the experimental group received an additional behavioural intervention. This intervention aimed to increase the amount of everyday physical activity after discharge from inpatient rehabilitation. Thirteen individual face-to-face sessions with a coach were planned, each session having a maximum duration of 1 hour. For practical reasons, some sessions after discharge were conducted by telephone. Two sessions were scheduled per month beginning 2 months before discharge and ending 3 months after discharge; thereafter, in the following 3 months there was one session per month. Each physiotherapist or occupational therapist who acted as coach for the behavioural intervention was trained in motivational interviewing, as based on the transtheoretical model. Motivational interviewing has been shown to be an effective method for altering behaviours.[20]

Each session began with the participant proposing the topics of conversation for that session. The behavioural intervention had four main components. The first component was feedback on daily wheelchair activity using bicycle odometers. A bicycle odometer was attached to the wheelchair and registered the distance travelled per day. The participant was instructed to keep track and to set goals toward increasing the travelled distance. The second component was formulation of action plans on how and when to be physically active and formulation of coping strategies for dealing with barriers that could hinder the actual performance of an action plan. The next component was a home visit by the coach in the first month after discharge, during which the coach helped to optimise the home and the environment of the participant for an active lifestyle. The last component was the provision of additional information at the request of the participant on relevant topics related to physical activity, such as possible health benefits.

Outcome measures

Measurements were performed at four scheduled assessment points: 2 months before discharge from inpatient rehabilitation, which was before the start of the interventions (baseline); 1 or 2 weeks before discharge from inpatient rehabilitation (discharge); 6 months after discharge from inpatient rehabilitation, which was within 1 month after completion of the behavioural intervention; and 1 year after discharge from inpatient rehabilitation. Each participant's start in the study was determined based on the planned discharge date, as estimated by the rehabilitation physician.

Objective measurement of physical activity

Physical activity was measured objectively with an ambulatory monitoring system[a] (Figure 1), with body-fixed three-axis

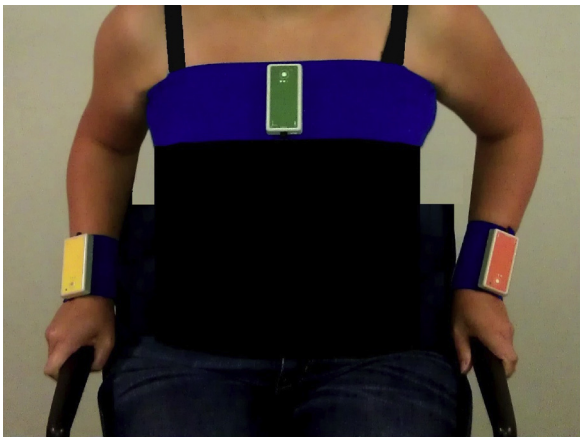

Figure 1. Activity monitor[a] used in the study.

accelerometers.[b] This monitoring system validly quantifies mobility-associated activities and postures, and detects inter-group differences in physical activity, including in people with SCI.[21,22] The system consists of three recorders that are wirelessly connected and synchronised every 10 seconds. One recorder was attached to each wrist and a third recorder to the sternum, using specially developed belts. At each scheduled assessment point, the recorders were worn continuously for 96 hours on four consecutive weekdays during all activities, except swimming, bathing and sleeping. The minimal acceptable duration of a measurement was 24 hours,[23] and outcomes were averaged over all available 24-hour periods for each scheduled assessment point. Participants were asked to note in a diary the time and duration of swimming, so that these periods could be corrected manually. To avoid measurement bias, participants were advised not to alter their usual activities and therapy on the days that the accelerometers were worn. Accelerometer signals of each recorder were sampled and stored on a digital memory card. Measurements were uploaded to a computer for kinematic analysis using commercial software.[c] Details of the configuration and analysis have been described elsewhere.[22,24]

The accelerometry data were analysed to generate several outcomes. The first outcome was total duration of wheeled physical activity, expressed in minutes per 24-hour period. Wheeled physical activity included both wheelchair propulsion and handcycling. In addition, the total duration of wheelchair propulsion and handcycling were also determined separately, again expressed in minutes per 24-hour period.

Further detailed information on wheelchair propulsion was gained by analysing the number of total continuous wheelchair propulsion bouts lasting longer than 5 seconds. These wheelchair propulsion bouts were analysed in pre-defined categories of bout duration (5 to 10 seconds, 10 to 60 seconds, and 1 to 10 minutes).

Sedentary daytime was analysed as the total duration of sedentary daytime bouts longer than 30 minutes. Sedentary daytime was defined as sitting and lying during the day without interruption by physical activity for a minimum of 5 seconds, expressed in minutes per 24-hour period. Lastly, mean motility per 24-hour period was analysed. Motility is based on the variability of the accelerometer signal of the trunk and arm recorders and is a measure of intensity and duration of all movement, expressed in gravitational force (g).[22]

Self-reported physical activity level

Self-reported physical activity levels were measured with the Dutch version of the Physical Activity Scale for Individuals with Physical Disabilities (PASIPD), which is a 13-item, 7-day recall questionnaire developed for people with a physical disability.[25] This tool consists of questions regarding leisure time, household-related and work-related physical activity. The total PASIPD score was calculated by multiplying the average hours per day for each item by a given metabolic equivalent (MET) value associated with the intensity of the activity. Because the questionnaire is not suitable for people in inpatient rehabilitation, self-reported physical activity was only measured at 6 and 12 months after discharge.

Data analysis

Forty-two participants were required to detect a 30-minute difference per 24-hour period in objectively measured, wheeled physical activity between the experimental group and the control group, with an anticipated standard deviation of 35 minutes,[26] power of 0.8, and an alpha of 0.05. The study aimed to recruit 60 participants to allow for dropouts. The power analysis was based on a previous study, from the same department, on the physical activity level of people with subacute SCI.[1] The power analysis did not consider repeated measurements or missing values. Independent *t*-tests and Chi-square tests were used to test for differences in personal characteristics, lesion characteristics and baseline physical activity between the dropouts of both groups.

To determine the effects of adding the behavioural intervention to usual rehabilitation, Generalised Estimating Equation (GEE) analyses with exchangeable correlation structures were performed. First, overall models for each outcome variable were made, including group allocation and baseline values of the particular outcome variable. Then, we assessed the between-group differences for the three follow-up measurements (before discharge, 6 and 12 months after discharge) by adding time and a group-by-time interaction variable to the overall models. The between-group difference, *p* and confidence intervals for the crude models were presented, and the models were adjusted for rehabilitation centre, gender and age. The between-group difference of the overall model represents the between-group difference estimated over all measurements using the GEE, and the between-group difference at the specified measurement time represents the mean between-group difference at that time. The control group was the reference group for all analyses. In the case of missing values at baseline, data of the particular participant from the second measurement were imputed to the baseline measurement of that participant. No baseline measurements were available for self-reported physical activity and, therefore, baseline corrections were performed using the baseline data of objectively measured physical activity.

Results

Flow of participants, therapists and centres through the study

Between January 2011 and August 2013, 45 people with subacute SCI were enrolled in the study (Figure 2). Three participants in the experimental group and three in the control group dropped out before the second measurement and therefore could not be included in the analysis. Dropouts in the experimental group (n = 12) and in the control group (n = 11) did not differ substantially in terms of personal or lesion characteristics and physical activity at baseline. Baseline personal and lesion characteristics of the remaining 39 participants are presented in Table 1. Participants completing the behavioural intervention attended on average 73% of sessions.

For logistic and technical reasons, the intended measurement duration with the activity monitor was not always met. Average measurement duration with the activity monitor was 65 hours (SD 26, range across all measurement occasions 58 to 72 hours) out of the intended 96 hours. A total of 112 activity monitor measurements were available (35 at baseline, 30 before discharge, 27 at 6 months after discharge, and 20 at 12 months after discharge). Two measurements at baseline were missing due to logistic problems, five measurements at discharge were missing due to unexpected early discharge from inpatient rehabilitation, two discharge measurements and one measurement 6 months after discharge were unavailable due to technical problems and 10 measurements (two at baseline, three before discharge, three at 6 months after discharge, and two at 12 months after discharge) were unavailable because the participant did not wear the activity monitor for at least 24 hours.

We planned to perform an intention-to-treat analysis, and therefore we included all available data in the analysis. Unfortunately, we were not able to obtain physical activity data in participants who dropped out of the study for different reasons: some refused to perform the activity monitor measurement; some measurement was not possible due to medical complications; and in the persons that dropped out because they were no longer dependent on a manual wheelchair, measuring wheeled physical activity is useless.

Intervention effects

Figure 3 presents the observed data of objectively measured, wheeled physical activity. Table 2 presents the observed data for the remaining outcome measures. The modelled data are

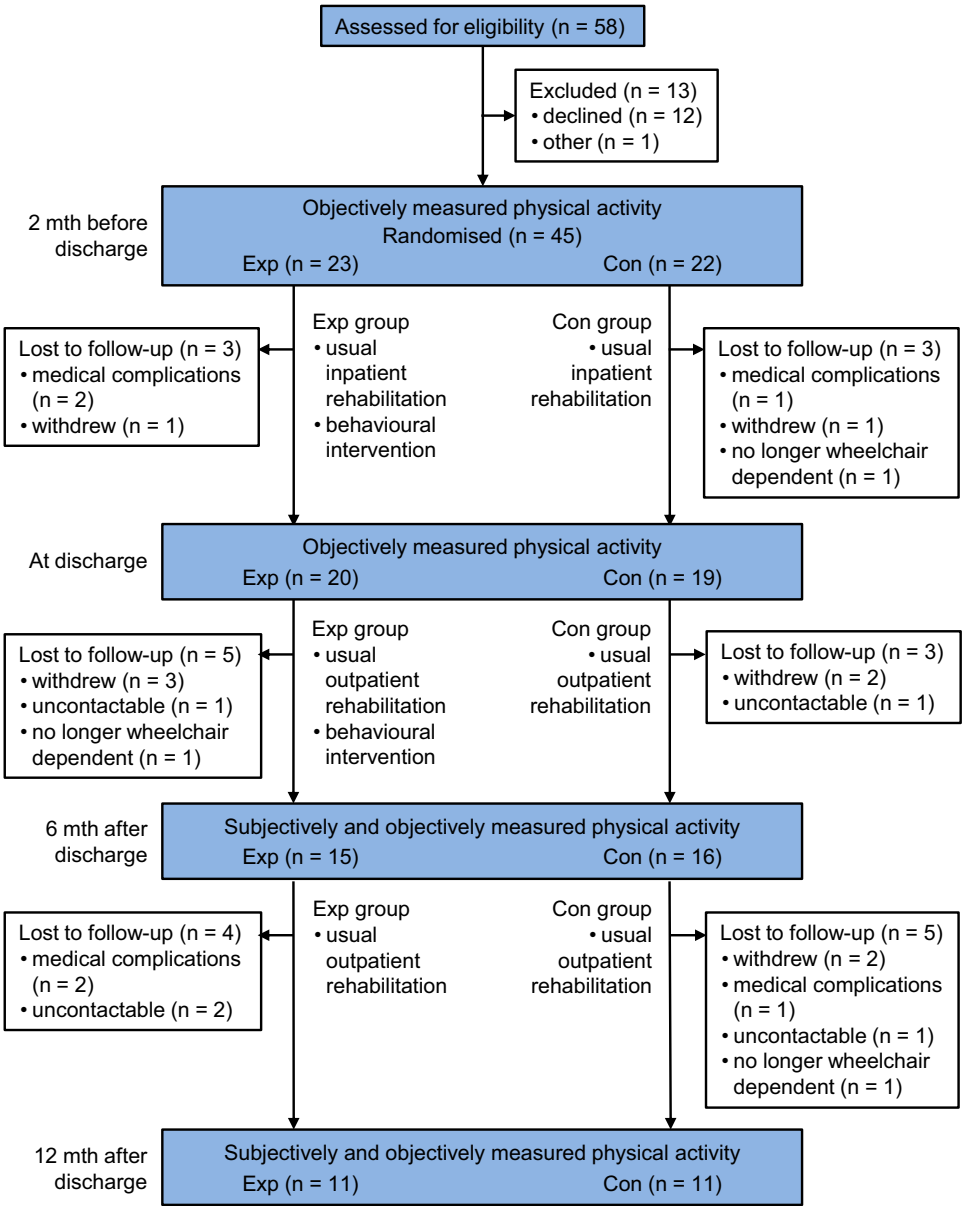

Figure 2. Flow of participants through the study.

presented in Table 3. (Individual participant data are presented in Table 4; see eAddenda for Table 4). Overall intervention effects were found for wheeled physical activity, wheelchair propulsion, handcycling and self-reported physical activity. At 6 months after discharge, the behavioural intervention increased wheeled physical activity by a mean of 28 minutes per day (95% CI 8 to 48). At 12 months after discharge, the behavioural intervention increased wheeled physical activity by a mean of 25 minutes per day (95% CI 1 to 50). For wheelchair propulsion, the intervention effect was largest at 6 months after discharge (mean between-group difference 20 minutes per day, 95% CI 5 to 34). For handcycling, the intervention effect was largest at 12 months after discharge (mean between-group difference 16 minutes per day, 95% CI –1 to

Table 1
Characteristics of participants at baseline.

Characteristics	Exp (n = 20)	Con (n = 19)
Personal		
age *(yr)*, mean (SD)	44 (15)	44 (15)
gender, n (%) male	17 (85)	16 (84)
Lesion		
lesion level, n (%) tetraplegia	7 (35)	6 (32)
completeness, n (%) motor complete	13 (65)	11 (58)
time since injury *(d)*, mean (SD)	139 (67)	161 (81)
time since admission *(d)*, mean (SD)	104 (64)	108 (60)
cause, n (%) traumatic	14 (70)	12 (63)

Con, control group; Exp, experimental group.

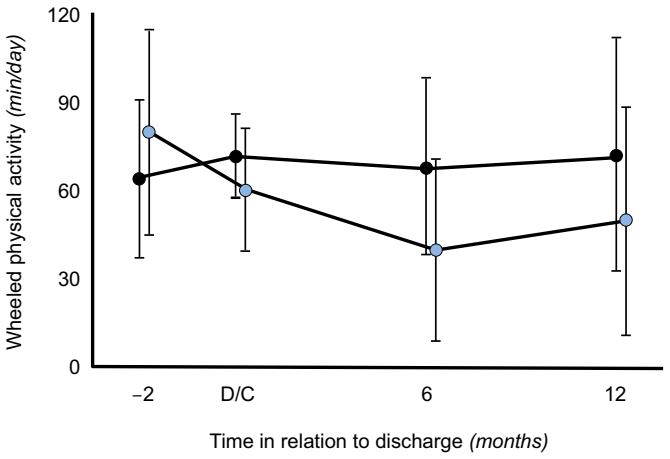

Figure 3. Observed data for objectively measured, wheeled physical activity for the experimental (black) and control (blue) groups. D/C = discharge.

Table 2
Mean (SD) for outcomes for each group at each assessment time.

Outcome	Groups							
	Baseline		Discharge		Month 6		Month 12	
	Exp	Con	Exp	Con	Exp	Con	Exp	Con
	(n = 18)	(n = 17)	(n = 16)	(n = 14)	(n = 13)	(n = 14)	(n = 10)	(n = 10)
Wheeled physical activity *(min/d)*	65 (27)	80 (35)	72 (14)	61 (21)	68 (30)	40 (31)	73 (40)	50 (39)
Wheelchair propulsion *(min/d)*								
total	55 (25)	68 (34)	59 (16)	46 (16)	51 (28)	32 (21)	46 (25)	38 (28)
in bouts of 5 to 10 s	8 (3)	10 (5)	8 (3)	7 (2)	12 (7)	7 (5)	10 (4)	10 (5)
in bouts of 10 to 60 s	32 (14)	41 (19)	35 (10)	29 (11)	32 (19)	20 (13)	29 (17)	23 (19)
in bouts of 1 to 10 min	14 (11)	17 (13)	16 (10)	10 (6)	6 (5)	4 (4)	7 (6)	5 (5)
Handcycling *(min/d)*	10 (10)	12 (14)	13 (13)	14 (8)	17 (20)	8 (17)	26 (30)	12 (15)
Sedentary daytime *(min/d)*	147 (100)	119 (104)	128 (94)	126 (102)	212 (133)	242 (187)	254 (174)	244 (180)
Motility *(g)*	16 (5)	17 (4)	16 (4)	16 (4)	15 (5)	13 (5)	17 (5)	14 (6)
Self-reported physical activity [a] *(MET*hr/d)*	–	–	–	–	32 (34)	10 (8)	26 (11)	11 (12)

Exp = experimental group, Con = control group.
[a] Physical Activity Scale for Individuals with Physical Disabilities (PASIPD).

Table 3
Crude and adjusted mean (95% CI) difference between groups from GEE models.

Outcome	Crude difference between groups				Adjusted difference between groups[a]			
	Overall	Discharge minus baseline	Month 6 minus baseline	Month 12 minus baseline	Overall	Discharge minus baseline	Month 6 minus baseline	Month 12 minus baseline
	Exp minus Con	Exp minus Con	Exp minus Con	Exp minus Con	Exp minus Con	Exp minus Con	Exp minus Con	Exp minus Con
		(n = 28)	(n = 27)	(n = 20)		(n = 28)	(n = 27)	(n = 20)
Wheeled physical activity *(min/d)*	22 (6 to 37)	10 (−8 to 21)	29 (7 to 50)	26 (−2 to 54)	21 (8 to 35)	10 (0 to 20)	28 (8 to 48)	25 (1 to 50)
Wheelchair propulsion *(min/d)*								
total	13 (4 to 23)	9 (0 to 19)	20 (5 to 35)	8 (−10 to 25)	13 (4 to 23)	9 (1 to 18)	20 (5 to 34)	8 (−9 to 24)
in bouts of 5 to 10 s	2 (1 to 4)	1 (−0 to 3)	5 (1 to 8)	0 (−3 to 3)	2 (1 to 4)	2 (−0 to 3)	5 (1 to 8)	0 (−3 to 3)
in bouts of 10 to 60 s	8 (2 to 14)	5 (−1 to 10)	13 (4 to 23)	4 (−7 to 16)	8 (2 to 14)	5 (−1 to 11)	14 (5 to 21)	4 (−7 to 15)
in bouts of 1 to 10 min	3 (0 to 5)	3 (−2 to 8)	3 (−1 to 7)	2 (−2 to 7)	2 (−0 to 5)	2 (−2 to 7)	2 (−1 to 5)	2 (−3 to 6)
Handcycling *(min/d)*	8 (−1 to 17)	−1 (−8 to 7)	10 (−4 to 23)	17 (−3 to 37)	8 (1 to 15)	1 (−7 to 10)	9 (−4 to 22)	16 (−1 to 34)
Sedentary daytime *(min/d)*	−40 (−110 to 32)	−21 (−69 to 25)	−56 (−152 to 25)	−20 (−127 to 86)	−34 (−97 to 29)	−14 (−69 to 40)	−50 (−134 to 33)	−21 (−119 to 77)
Motility *(g)*	1.74 (−0.42 to 3.90)	0.32 (−1.43 to 2.07)	2.05 (−1.43 to 5.54)	3.17 (−0.50 to 6.85)	1.24 (−0.25 to 2.73)	0.06 (−2.15 to 2.27)	1.75 (−1.01 to 4.52)	1.98 (−0.65 to 4.61)
Self-reported physical activity [b] *(MET*hr/d)*	20 (7 to 33)	–	22 (4 to 39)	17 (6 to 28)	20 (8 to 33)	–	21 (5 to 38)	19 (7 to 30)

Exp = experimental group, Con = control group.
[a] Adjusted for rehabilitation centre, gender and age.
[b] Physical Activity Scale for Individuals with Physical Disabilities (PASIPD).

34), although this was not statistically significant. Analyses of wheelchair propulsion bouts showed that the largest overall intervention effect was for bouts of 10 to 60 seconds (between-group difference 8 minutes, 95% CI 2 to 14).

In order to investigate the category of activity intensity that most contributed to the overall effect of the behavioural intervention on physical activity, the individual participants' data were plotted. It was observed that the behavioural intervention had the effect of preventing the participants from having a very inactive lifestyle. Therefore, a post hoc test was conducted based on the proportion of participants who had a physical activity level $<$ 30 minutes per day. In the experimental group, 6 months after discharge, none of the participants had a physical activity level $<$ 30 minutes per day, whereas in the control group there were seven participants (50%) with an activity level $<$ 30 minutes per day. One year after discharge, there was one person (10%) in the experimental group and four (40%) people in the control group with activity levels $<$ 30 minutes per day (data not shown).

Discussion

It is believed that this was the first study performed to assess the added value of a behavioural intervention on objectively measured physical activity in people with subacute SCI. The

addition of a behavioural intervention was successful in preventing the decline in physical activity level after discharge[1] and resulted in 50% more wheeled physical activity. Moreover, the more active lifestyle was maintained for 1 year after discharge from inpatient rehabilitation.

Although the behavioural intervention resulted in more wheeled physical activity, the mean activity level in the experimental group was still only 1 hour and 13 minutes per 24 hours. Compared with the general population, the mean physical activity level of the experimental group was only 50% of that of the general population.[2] Possibly, physical strain (ie, the load of daily physical activities relative to physical capacity) is higher in people with SCI. Furthermore, for this group, daily self-care is already time-consuming and a strenuous everyday activity,[27] which leaves less time and energy for dynamic activities. Unfortunately, physical strain was not assessed in the present study. Future research on behavioural interventions should study physical strain and its relationship with physical fitness and health in people with subacute SCI.

The behavioural intervention had little focus on sedentary time during the day. This might explain the relatively small between-group differences on this outcome measure. Focusing more on breaking up long periods of sedentary daytime might optimise the intervention. However, breaking up sedentary time in people who are wheelchair dependent is difficult because sitting less is not possible. It is unknown for this group what type, intensity and duration of activity are necessary to break up sedentary time for health benefits.[4] Future studies should focus more on sedentary time in relationship to health benefits in people who are wheelchair dependent.

Of the previous studies performed on people with SCI in the chronic phase, only one study used an objective measure of physical activity and found no significant effect of the intervention.[13] When comparing our objective and self-reported between-group effects, the effect on the self-reported measure confirmed our objective results, but was relatively much larger (100% versus 50% of the mean). This confirms previous findings that self-reported measures overestimate changes in physical activity level.[17] Therefore, especially in intervention studies where self-reported outcomes could be biased by socially desirable answers, care should be taken not to draw strong conclusions from questionnaires on physical activity.

The main limitations of the present study were the small sample size, missing values and dropouts. However, despite these limitations, significant between-group differences were found in the primary outcome measure. Based on inclusion rates in a previous cohort study, the present study was expected to be able to enrol more participants.[28] It is possibly more difficult to include people in a randomised controlled trial than a cohort study. Furthermore, average lesion characteristics and age of people with SCI have changed over the last 15 years.[29,30] Nowadays, relatively more people have incomplete lesions and are therefore less likely to be wheelchair dependent. In addition, relatively more people are older than 65 years, and therefore did not meet the inclusion criteria.

Measuring physical activity objectively with the activity monitor[a] had some limitations. First, due to technological challenges or user errors, the intended measurement period of 4 days was not always achieved. Secondly, for logistic reasons and to facilitate comparison of the measurements during inpatient rehabilitation and after discharge, the decision was made to only take measurements on weekdays. Therefore, it is unknown what effect the intervention had on weekend physical activity.

In summary, a behavioural intervention consisting of 13 individual sessions with a coach was effective in eliciting a behavioural change toward a more active lifestyle among people with subacute SCI. The addition of a behavioural intervention to regular rehabilitation and handcycle training resulted in 50% more wheeled physical activity. In order to promote an active lifestyle in this population that is generally known to be inactive and at risk of health complications, it is advised that a behavioural intervention is added to the regular care of people with subacute SCI.

What is already known on this topic: People with spinal cord injury often have low physical activity after discharge from their initial inpatient rehabilitation, despite regaining physical capacity and despite benefits of physical activity. Some behavioural interventions to increase physical activity are effective in people with chronic spinal cord injury.
What this study adds: In people with subacute spinal cord injury, adding a behavioural intervention during and for 6 months after the initial period of inpatient rehabilitation increases the amount of physical activity. The significant improvement in physical activity was still evident 1 year after discharge.

Footnotes: [a]VitaMove, 2 M Engineering, Veldhoven, The Netherlands; [b]Freescale MMA7260Q, Denver, USA; [c]VitaScore BV, Gemert, The Netherlands

eAddenda: Table 4 can be found online at doi:10.1016/j.jphys.2015.11.003

Ethics approval: The Medical Ethics Committee of Erasmus University Medical Center approved this study. All participants gave written informed consent before data collection began.

Competing interests: Nil.

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