



Effects of self-monitoring using an accelerometer on physical activity of older people with long-term care insurance in Japan: a randomized controlled trial

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Daily record

Recording physical activity can prevent physical inactivity and promote physical activity. It can also help prevent disease. **Set goals and keep records!**



Click to view and confirm the number of steps taken.

♡ 📏 Check with accelerometer

Set a target of to the current number of steps

Current steps/day	(e. g. , 2000 steps)	
+50 steps/day	(e. g. , 2050 steps)	
+350 steps/week	(e. g. , 2350 steps)	



Supplementary material Figure 1. Pamphlet 1

Please check the total daily time sedentary behavior.

- Watch TV, DVD
- Smartphones, PC
- Reading, conversation, listening to music, etc.

(hr min)

(hr min)

(hr min)

♡ Target value for sedentary behavior

Set a target of -30 minutes from the current sedentary behavior time



Current sedentary behavior time (e.g.10 hours)	
-30 minutes/day value (e.g.9 hours 30 minutes)	

TV=7hr	}	Current Total SB time ➔10hr/day
Smartphone =1hr		
Reading=1hr		
Conversation=1hr		



Supplementary material Figure 2. Pamphlet 2

♡ Calender: Daily record Week 1-2

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Date	/	/	/	/	/	/	/
Steps							
SB time							
Pain	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Fatigue	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Date	/	/	/	/	/	/	/
Steps							
SB time							
Pain	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Fatigue	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Remarks							

Supplementary material Figure 3. Pamphlet

Supplementary material Table 1. Participant characteristics and accelerometer wearing time.

	Intervention group (n=19)	Control group (n=19)	<i>t</i> or χ^2 value	<i>p</i> Value
Age, years	78.9 ± 9.7	82.8 ± 9.1	-1.3	0.217
Sex, male, %	15.8	42.1	3.2 ^a	0.074
Body mass index, kg/m ²	24.6 ± 4.5	24.0 ± 2.2	0.5	0.601
LTCI, level of support 1/2, %	57.9/42.1	47.4/52.6	1.3 ^a	0.529
Comorbidity, %				
Hypertension	84.2	57.9	3.2 ^a	0.074
Diabetes	31.6	5.3	4.4 ^a	0.036
Dyslipidemia	31.6	5.3	4.4 ^a	0.036
Orthopedic disease	63.2	73.7	0.5 ^a	0.485
Cerebrovascular disease	63.2	15.8	8.9 ^a	0.003
Heart disease	26.3	10.5	1.6 ^a	0.209
Chronic kidney disease	0.0	5.3	1.0 ^a	0.311
Cancer disease	10.5	31.6	2.5 ^a	0.111
Medicine, %				
Ca antagonist	43.8	42.1	<0.1 ^a	0.922
ARB or ACE	25.0	5.3	2.8 ^a	0.096
Statin	18.8	36.8	1.4 ^a	0.238
Hypoglycemic drug	25.0	10.5	1.3 ^a	0.258
Beta-blocker	0.0	10.5	1.8 ^a	0.181
Handgrip strength, kg	19.3 ± 5.8	22.3 ± 8.6	-1.3	0.212
Male, kg	24.7 ± 6.7	30.4 ± 6.2	-1.3	0.217
Female, kg	18.0 ± 5.2	16.5 ± 4.1	1.0	0.344
Normal gait speed, m/sec	0.91 ± 0.23	1.07 ± 0.33	-1.7	0.100
One-leg standing time, sec	13.3 ± 17.9	15.1 ± 21.3	-0.3	0.784
Sit-to-stand-5, sec	11.4 ± 3.3	12.5 ± 3.5	-1.0	0.306
Wearing time, baseline, min/day	832.9 ± 83.7	884.3 ± 111.7	-1.6	0.118
Wearing time, 5-week follow-up, min/day	825.6 ± 94.4	881.5 ± 141.0	-1.4	0.160
Non-wearing time, baseline, min/day	307.1 ± 83.7	255.7 ± 111.7	1.6	0.118
Non-wearing time, 5-week follow-up, min/day	331.3 ± 121.0	258.5 ± 141.0	1.7	0.096

ARB: Angiotensin II receptor blocker; ACE: angiotensin-converting-enzyme inhibitor; LTCI: long-term care insurance.

Values are shown as mean ± SD or ordinal variables and counts (%) for categorical variables.

^a χ^2 value.

Statistical analysis: Baseline participant characteristics and physical function, as well as accelerometer wearing time, were compared between the two groups using an unpaired t-test or χ^2 test.

Result: A comparison between the two groups showed that the intervention group had higher rates of diabetes, dyslipidemia, and cerebrovascular disease than the control group ($p < 0.05$).

Supplementary material Table 2. Physical activity and health-related quality of life in the two groups.

	Intervention group (n=19)	Control group (n=19)	<i>t</i> Value	<i>p</i> Value	Effect size (<i>d</i>)	Interactions			Interactions after adjustment		
						Mean square	<i>F</i> value	<i>p</i> value	Mean square	<i>F</i> Value	<i>p</i> Value
Number of steps, steps/day						1576540.9	19.3	<0.001	734526.8	9.7	0.004
Baseline	1288.4 ± 1036.8	1534.4 ± 1202.6	-0.7	0.504	0.22						
5-week follow-up	1682.7 ± 1126.5	1352.7 ± 954.1	1.0	0.336	0.32						
Sedentary behavior, min/day						15612.8	10.8	0.002	10258.6	6.6	0.015
Baseline	549.5 ± 110.6	577.1 ± 132.4	-0.7	0.489	0.23						
5-week follow-up	523.3 ± 108.8	608.3 ± 154.4	-2.0	0.058	0.64						
Light activity, min/day						11419.5	6.5	0.015	7495.8	4.0	0.054
Baseline	276.3 ± 89.4	296.5 ± 105.4	-0.6	0.529	0.21						
5-week follow-up	293.0 ± 107.4	264.1 ± 97.0	0.9	0.390	0.28						
Moderate activity, min/day						25.8	1.7	0.203	37.3	2.4	0.133
Baseline	8.6 ± 8.9	10.7 ± 7.4	-0.8	0.438	0.25						
5-week follow-up	9.3 ± 9.7	9.1 ± 7.1	0.1	0.930	0.03						
Vigorous activity, min/day						0.1	1.9	0.180	<0.1	0.8	0.391
Baseline	0.3 ± 1.2	0.2 ± 0.7	0.3	0.744	0.11						
5-week follow-up	0.2 ± 0.8	0.3 ± 0.9	-0.2	0.853	0.06						
EuroQol 5-Dimension 5-Level						<0.1	0.9	0.356	<0.1	0.2	0.676
Baseline	0.63 ± 0.19	0.74 ± 0.15	-1.6	0.112	0.63						
5-week follow-up	0.56 ± 0.21	0.60 ± 0.24	-0.5	0.651	0.15						

Values are shown as mean ± SD. Adjustments were made for diabetes, dyslipidemia, and cerebrovascular disease.

Statistical analysis: After adjusting for items that were significantly different between the two groups, intervention effects were analyzed using repeated measures two-way analysis of variance, with group (intervention group, control group) and term (baseline, 5-week follow-up) as factors.

Result: There was a significant interaction between group (intervention, control) and time (baseline, 5-week follow-up) in the number of steps taken, duration of sedentary behavior, and light activity ($p < 0.05$), and after adjusting for cerebrovascular disease, diabetes, and dyslipidemia, there was a significant interaction between the number of steps taken and duration of sedentary behavior ($p < 0.05$).