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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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Supplementary Material

Index

Supplementary material Figure 1. Pamphlet 1 (Page 2)

Supplementary material Figure 2. Pamphlet 2 (Page 3)

Supplementary material Figure 3. Pamphlet 3 (Page 4)

Supplementary material Table 1. Participant characteristics and accelerometer wearing time. (Page 5)

Supplementary material Table 2. Physical activity and health-related quality of life in the two groups. (Page 6)

Daily record

Recording physical activity can prevent physical inactivity and promote physical activity. It can also help prevent disease. <u>Set goals and keep records!</u>



♡ Target value for steps → Check with accelerometer

Set a target of +50 steps 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





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							
Fatigue	Yes/No							
Date	/	/	/	/	/	/	/	
Steps								
SB time								
Pain	Yes/No							
Fatigue	Yes/No							
Remarks								

Supplementary material Figure 3. Pamphlet

	Intervention group (n=19)	Control group (n=19)	$t \text{ or } \chi^2$ value	p Value
Age, years	$78.9 \hspace{0.2cm} \pm \hspace{0.2cm} 9.7$	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	$24.6 \hspace{0.2cm} \pm \hspace{0.2cm} 4.5$	$24.0 \hspace{0.2cm} \pm \hspace{0.2cm} 2.2$	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	3.2ª	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	1.6ª	0.209
Chronic kidney disease	0.0	5.3	1.0 ^a	0.311
Cancer disease	10.5	31.6	2.5ª	0.111
Medicine, %				
Ca antagonist	43.8	42.1	<0.1 ^a	0.922
ARB or ACE	25.0	5.3	2.8ª	0.096
Statin	18.8	36.8	1.4 ^a	0.238
Hypoglycemic drug	25.0	10.5	1.3ª	0.258
Beta-blocker	0.0	10.5	1.8 ^a	0.181
Handgrip strength, kg	19.3 ± 5.8	$22.3 \hspace{0.2cm} \pm \hspace{0.2cm} 8.6$	-1.3	0.212
Male, kg	$24.7 \hspace{0.2cm} \pm \hspace{0.2cm} 6.7$	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	$0.91 \hspace{.1in} \pm \hspace{.1in} 0.23$	$1.07 \hspace{0.1in} \pm \hspace{0.1in} 0.33$	-1.7	0.100
One-leg standing time, sec	$13.3 \hspace{0.2cm} \pm \hspace{0.2cm} 17.9$	$15.1 \hspace{0.2cm} \pm \hspace{0.2cm} 21.3$	-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	$832.9 \hspace{0.2cm} \pm \hspace{0.2cm} 83.7$	884.3 ± 111.7	-1.6	0.118
Wearing time, 5-week follow-up, min/day	825.6 ± 94.4	$881.5 \hspace{0.2cm} \pm \hspace{0.2cm} 141.0$	-1.4	0.160
Non-wearing time, baseline, min/day	$307.1 \hspace{0.2cm} \pm \hspace{0.2cm} 83.7$	255.7 ± 111.7	1.6	0.118
Non-wearing time, 5-week follow-up, min/day	331.3 ± 121.0	$258.5 \hspace{0.2cm} \pm \hspace{0.2cm} 141.0$	1.7	0.096

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

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

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

^a χ2 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).

										Interactions			Interactions after adjustment		
	Interver (r	ntion n=19	group)		Contro (n:	ol group =19)	t Value	p Value	Effect size (d)	Mean square	F value	p value	Mean square	F Value	p Value
Number of steps, steps/day										1576540.9	19.3	< 0.001	734526.8	9.7	0.004
Baseline	1288.4	±	1036.8	1.	534.4	± 1202.6	-0.7	0.504	0.22						
5-week follow-up	1682.7	±	1126.5	13	352.7	± 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	4	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	2	296.5	± 105.4	-0.6	0.529	0.21						
5-week follow-up	293.0	±	107.4	2	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						

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

Values are shown as mean \pm 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).