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The effect of IT convergence gamification training in community-dwelling older people: Pilot study

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Introduction/Background

For the elderly, the reduction of motor function is natural phenomena, but requires a variety of concerns about how to slow down the rate of decline. Therefore, it is necessary to expand the exercise facilities or welfare facilities for the elderly, but the reality is suffering from space, cost problem and compliance. In the case of elderly people, the social exercise and the medical exercise therapy should be distinguished, but the boundary is usually ambiguous. Furthermore, exercise for the elderly, whether preventive or therapeutic, should be provided as a public service, but this is also difficult.

Material and Method

In this study, we tried to approach exercise therapy for improvement of elderly physical function such as walking, balance and flexibility etc. through gamification exercise equipment(Men&Tel, Korea, Balpro 110, Model No. SBT 110) (Figure 1). The elderly over 65 years of age were trained for 8 weeks(30 minutes/3 times/week) and the functional ability was evaluated after 4 weeks of rest. Both groups were randomized. Group 1 exercises were performed by conventional method, and Group 2 exercises were performed by IT convergence exercise equipment.

Results

There were both functional improvement in Group 1(10 patients) using conventional exercise and Group 2(10 patients) using Balpro 110 (Figure 2,3). In the first group, after 8 weeks of training, lower extremity muscle strength and balance ability, and body fat mass and skeletal muscle mass improved significantly. In the second group, leg strength, balance, mobility, walking abilities, flexibility, body fat and skeletal muscle mass were statistically significantly improved.

Conclusion

The results of this study suggest that the information technology convergence gamification device will be a supplementary tool for the exercise of the next generation elderly population and at the same time provide an opportunity to think about the future direction.



Fig 1. Men&Tel, Korea, Balpro 110, Model No. SBT 110

Group 1			
	Pre	Post (8weeks)	Resting (4 weeks)
FTST_30 sec	15.70±2.40	20±2.54	19.6±1.65
FTST_time	8.17±1.67	7.03±1.39	7.27±0.99
BBS	54.6±1.35	55.6±0.52	55.4±0.7
TUG	7.03±0.75	6.56±0.64	7.04±0.71
10WMT	4.03±0.52	3.76±0.48	3.98±0.37
CSRT	6.57±5.75	8.84±7.23	9.0±5.16
KFES-I	16.8±1.31	16.6±1.06	17.40±2.50
BMI	24.46±2.04	24.49±2.02	24.49±2.02
% Body Fat	27.35±6.85	24.79±7.39	24.76±7.67
SMI	7.73±0.69	8.18±0.73	8.36±0.79
Phase angle	5.78±0.75	5.99±0.49	5.9±0.6

Fig 2. The effect of IT convergence gamification training in group1

Group 2			
	Pre	Post (8weeks)	Resting (4 weeks)
FTST_30 sec	16.2±2.57	20.8±2.52	20.7±3.49
FTST_time	8.79±2.66	7.00±1.44	7.17±1.52
BBS	54.4±1.08	55.4±0.51	55.7±0.48
TUG	7.65±0.79	6.59±0.80	7.24±0.74
10WMT	4.41±0.59	3.98±0.41	3.94±0.37
CSRT	9.15±8.86	12.48±10.29	11.78±9.09
KFES-I	18.10±2.65	17.10±1.91	16.60±1.90
BMI	23.58±1.32	23.58±1.31	23.58±1.32
% Body Fat	27.31±7.2	24.07±6.75	24.11±7.93
SMI	7.22±1.01	7.80±0.97	7.96±1.08
Phase angle	5.61±0.76	5.96±0.80	5.79±0.71

Fig 3. The effect of IT convergence gamification training in group2