Physical assessment for elderly people via Nike+ iPod

C-L. CHAN, Y-G. CHEN, Y-T. LU, Y-C. LIN, K-R. LAI. **Physical assessment for elderly people via Nike+ iPod.** *Gerontechnology 2014; 13(2):175;* doi:10.4017/gt.2014.13.02.379.00 **Purpose** Elderly falls are regarded as one of the most important health issues for the elderly population. In Taiwan, falling is the second most frequent reason of accidental death of elderly people[1]. However, falling can be prevented. Studies have revealed that people with less fear of falling were more active than those with more fear of falling[2]. Another study found that elderly's physical function degradation makes gait motion need to be adjusted to enhance their stability of walking and suggested that they should engage in sports activities more and avoid sedentary life[3]. Walking is quite suitable for the elderly wanting to train their balance, because walking can strengthen lower limb muscles and enhance gait stablility[4]. The specific aim of this study is to further explore the relationship between the elderly's walking gaits, speed, energy consumption and the balance. **Method** NIKE+ APPs in iPod® nano is a new technology for people to record their athletic data. It can be used to measure number of steps, distance, time and energy consumption accurately. We used iPod® nano to collect the elderly's walking data and measure heartbeat by another mobile devices App named Instant-Heart-Rate. We compared those elderly with regular walking habits and those without. The Tinetti balance Evaluation Scale was used to test the subjects' balance and gait pre-test and post-test. The Falls Self-Efficacy Scale (FES-I) was used to evaluate their falling risk. **Results & Discussion** The data of experimental subjects' physical conditions are shown in *Table 2*, and we have some preliminary results. The average walking speeds for the elderly was consistent with other studies. In our study, female subjects' average walking distance was longer than male subjects and their fall self-efficacy was also lower than the male (lower is better). Walking distance can be a factor of fall self-efficacy. The elderly can walk longer distance would have less falling risk.

References

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Table1. The variables and units used to collect data from the subjects

Variable	unit
Date	
Number of steps	steps
Average walking speed	min/km
Walking distance	km
Walking time duration	min
Heart rate (before exercise)	beats/min
Energy consumption	cal
Heart rate (after exercise)	beats/min
Gait	qualitative

Table 2. Descriptive statistics of current experimental subjects

Item	Male (55.6%)	Female (44.4%)
n	5	4
Age, years	79.4	73.3
Distance Mean±SD, km	1.5±0.3	2.3±1.2
Speed Mean±SD, min/km	15.7±2.5	18.1±7.1
Fall self-efficacy Mean±SD	21.0±4.6	20.3±4.4