

PAPER

Personal Mobility

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Purpose Aging population has become a global issue among whole world countries. Medical cost also becomes a huge burden for many countries as well. However, leisure activities have been regarded as an important relevance to build healthy aging in biological health, mental health and social relationship^{1,2}. It will help middle-aged adults (or even older adults) willing to participate in recreational activities with suitable leisure mobile tools³. A prototype of power recycling generator on older adult scooter was designed by our team in 2017. Through the power system conversion of this prototype, the battery in parallel was able to extend the battery life. It improved the outdoor mobility for older adults. And thus, it also enhanced their willingness to participate in community activities. More smart leisure issues were concerned and integrated in this study. **Method** An orange 14-inch electric folding bicycle with highest speed 35Km/h was designed as control group (Figure 1). A red 14-inch electric folding bicycle with 3 level switching control speed limit (30, 25, 20 Km/h) was designed as experimental group (Figure 2). For the activity concerned, a cell phone rack, rear storage bag and bicycle cushion were integrated and adjusted for middle-aged adults (Figure 3). A smart heart rate detection bracelet was paired with a smart phone to detect and monitor heart rate during leisure activities (Figure 4). Thirty middle-aged adults participated in the test. **Results & Discussion** 83.33% of the testers agreed that riding electric folding bicycles helped reduce the psychological stress. 86.67% of the testers agreed that 14 inches bicycles are more suitable and safe for Chinese middle-aged adults to be able to touch the ground with both feet. 93.33% of the testers agreed that electric bicycles assist and prevent excessive physical exertion. 86.67% of the testers preferred a rear storage bag rather than in the front. 76.67% of the testers agreed that a smart heart rate detection bracelet paired with a smart phone was suitable for leisure activities. For smart leisure activities in the future, a smart app will be implemented for middle-aged adults to set up alarms on the heart rate bracelet if an abnormal heart rate is detected. Alarms on the heart rate bracelet would be connected to the smart phone and sent out to the leisure teams and/or family.

References

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Figure 1. A prototype design in 2017



Figure 2. Control group



Figure 3. Experimental group



Figure 4. Smart heart rate detection bracelet