

노인재활

게시일시 및 장소 : 10 월 18 일(금) 08:30-12:20 Room G(3F)

질의응답 일시 및 장소 : 10 월 18 일(금) 10:00-10:45 Room G(3F)

## **P 1-13**

### **Finger-Rhythm Game Improving Physical and Cognitive Complex Activity of the Elderly**

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#### **Background**

Korea has rapidly entered an aged society, and a variety of health aids are currently being developed for healthy elder people, which is forecasting to become an ultra-aged society with 20.8 percent of the elder population in 2026. Currently, a combination of cognitive and physical enhancements is being developed primarily for therapeutic purposes. However, there is no much tool development for the general elder. In addition, the development of tools to enhance brain function through the exercise of the hands, which is an important part of the body, is very limited. Therefore, we are planning to develop a combined physical and cognitive activity-finger-rhythm game that can participate in brain function enhancement by combining a glove controller that is easy to use by the elderly.

#### **Methods**

To check the effects of using the physical and cognitive complex-activity tools, five experimental groups and control groups out of 10 senior citizens are randomly assigned to the military using the physical and cognitive complex activity-finger-rhythm game, and the group that uses finger counts exercises. The participants wear the glove controller and connect it to the PC through the Bluetooth module. Then, we measured the degree of finger flexion and rotation angle and direction according to hand movements through the flex and gyro sensors transmitting the specified keyboard value according to the measured value to the PC via Bluetooth. On the PC, note falling to the music beat are treated with a response set according to the received value. Quantitative and qualitative studies, such as satisfaction surveys, are conducted together to analyze the results of EEG measurements and self-efficiency tests during the activity to compare the differences between the two groups.

## Results

The study found that for older people, the rhythm game of fingers with physical and cognitive complex activities showed more brain activity in EEG than those of older people with general finger-count activity, and also had more meaningful results than those with simple finger exercises as a result of self-efficiency and activity.

## Conclusions

In order to promote awareness among the elderly, more diverse brain function activations and satisfactions of activities were identified in the composite activities of physical and cognitive enhancements through finger-rhythm games than in the conventional simple exercises. Therefore, rather than providing simple activities to the elderly, it is believed that expanded research will be necessary for those with cognitive problems, as well as to utilize games with a combination of physical and cognitive activities to maintain a healthy elder.

Keywords: Rhythm Game, Flex Sensor, Gyro Sensor, , Elderly

Acknowledgment :This research was financially supported by the “ICT Convergence Smart Rehabilitation Industrial Education Program” through the Ministry of Trade, Industry & Energy (MOTIE) and Korea Institute for Advancement of Technology (KIAT).

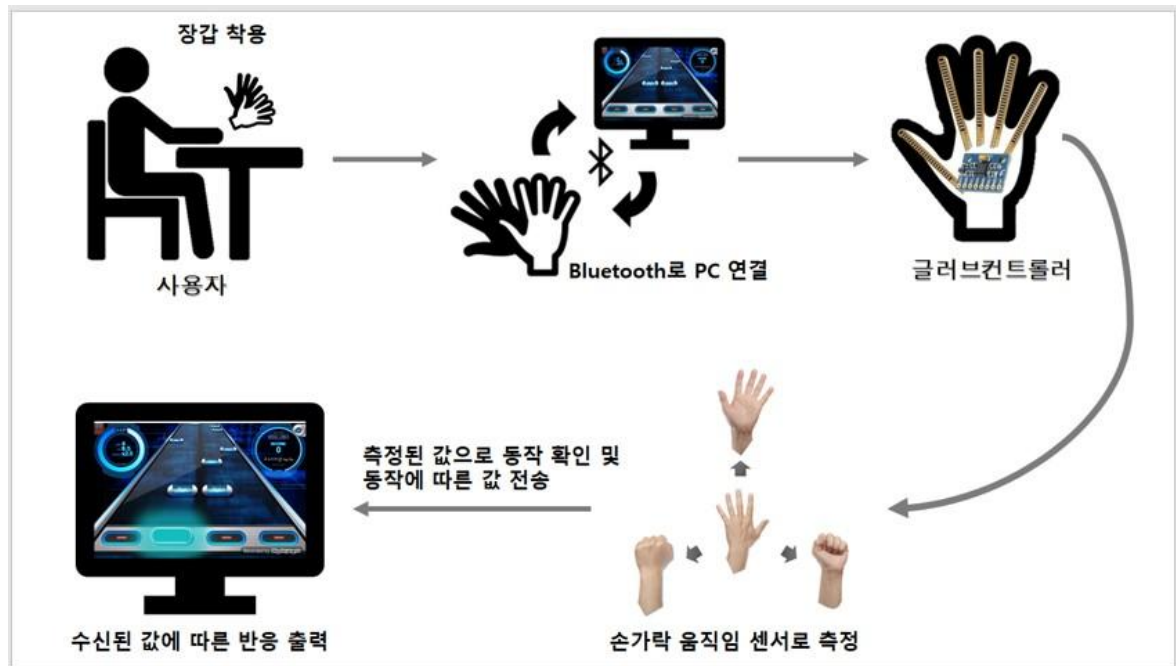


Fig.1 Process flow.