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Title	A Walking Speed Measurement System Using PIR Sensors for Early Detection of Pre-Frailty
Author	Tomihiko Utsumi and Masashi Hashimoto (Akita University, Japan)
Email	tutsumi@ie.akita-u.ac.jp

Abstract

In aging society, for elderly people to maintain the quality of life and lead a healthy and independent life, it is necessary to detect frailty between the state of health and the state of needed long-term care at an early stage. The purpose of this study is to construct a system that detects pre-frailty, which is the pre-stage of frailty, and notifies the watcher. Focusing on the decrease in walking speed of older adults in pre-frailty, we researched on measuring walking speed using a non-wearable pyroelectric infrared (PIR) sensor that the measurement could be performed with an average error of 3.5 % compared to the manual measurement. By installing the system indoors, elderly people can continuously their walking speed just by living daily lives. By detecting pre-frailty at an early stage and notifying the watcher, it is possible to recover to a healthy state by appropriate intervention such as exercise and dietary improvement.