

# Evaluation and Assistance of Lower Motor Function for Motor Disabled Persons

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## Abstract

Lower limb motor functions are important to prevent bedridden and to make independence in daily living and social participation. In order to support motor disabled persons or elderly people with decreased motor function in daily activities or rehabilitation training, evaluation of a level of subject's motor function is necessary. Based on the evaluated level of motor function, assistive technologies have to be provided to those motor disabled or elderly persons.

Here, I present, first, methods of measurement of lower limb movements with wearable sensor system using inertial sensors. Segment angles of lower limbs and stride length during walking can be measured with the wireless wearable motion measurement system using inertial sensors. Then, cycling wheel chair "Profhand" (TESS Co., Ltd.) developed by our research group is introduced. Profhand is not propelled by upper limbs like conventional wheelchairs, but a pedalled wheelchair. Finally, an application of functional electrical stimulation (FES) as an assistive technology for hemiplegic and paraplegic subjects is presented.

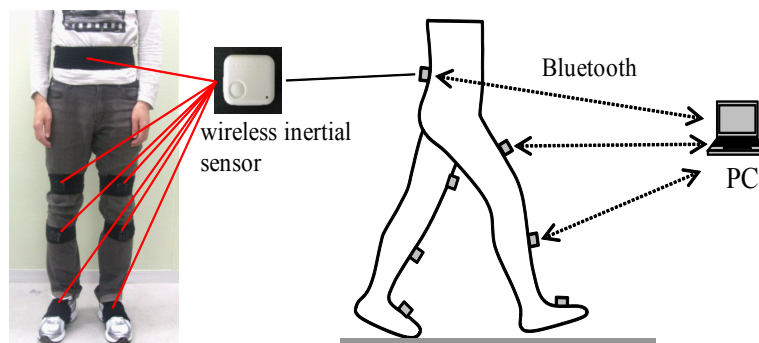


Fig. 1 Outline of the wireless wearable motion measurement system using inertial sensors.



Fig. 2 Cycling Wheelchair "Profhand" (TESS Co., Ltd.).