Mobile communication jacket for people with severe speech impairment.

Abstract:
Cerebral palsy is a movement disorder caused by damage to motor control areas of the developing brain during early childhood. Motor disorders can also affect the ability to produce clear speech and to communicate. The aim of this study was to develop and to test a prototype of an assistive tool with an embedded mobile communication device to support patients with severe speech impairments. A prototype was developed by equipping a cycling jacket with a display, a small keyboard, a LED and an alarm system, all controlled by a microcontroller. Functionality of the prototype was tested in six participants (aged 7-20 years) with cerebral palsy and global developmental disorder and three healthy persons. A patient questionnaire consisting of seven items was used as an evaluation tool. A working prototype of the communication jacket was developed and tested. The questionnaire elicited positive responses from participants. Improvements to correct revealed weaknesses were proposed. Enhancements like voice output of pre-selected phrases and enlarged display were implemented. Integration in a jacket makes the system mobile and continuously available to the user. The communication jacket may be of great benefit to patients with motor and speech impairments. Implications for Rehabilitation The communication jacket developed can be easily used by people with movement and speech...
impairment. All technical components are integrated in a garment and do not have to be held with the hands or transported separately. The system is adaptable to individual use. Both expected and unexpected events can be dealt with, which contributes to the quality of life and self-fulfilment.