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Articles

Defining the user requirements for wearable and optical fall prediction and fall detection devices for home use

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Abstract

One of the major problems in the development of information and communication technologies for older adults is user acceptance. Here we describe the results of focus group discussions that were conducted with older adults and their relatives to guide the development of assistive devices for fall detection and fall prevention. The aim was to determine the ergonomic and functional requirements of such devices and to include these requirements in a user-centered development process. A semi-structured interview format based on an interview guide was used to conduct three focus group discussions with 22 participants. The average age was 75 years in the first group, 68 years in the second group and 50 years in the third group (relatives). Overall, participants considered a fall prediction system to be as important as a fall detection

system. Although the ambient, unobtrusive character of the optical sensor system was appreciated, wearable inertial sensors were preferred because of their wide range of use, which provides higher levels of security. Security and mobility were two major reasons for people at risk of falling to buy a wearable and/or optical fall prediction and fall detection device. Design specifications should include a wearable, non-stigmatising sensor at the user's wrist, with an emergency option in case of falling.

Keywords:

Accidental falls | ambient assisted living | biomedical technology | caregivers | focus groups | gait | information and communication technology | mobility limitation | older adults | patient acceptance of health care | technology | medical | user-centered design

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