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Fall prevention exercise for older adults

Self-management with support of digital technology

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Abstract

Background: Falls are a major public health issue, which can cause physical and psychological suffering for the individual as well as large costs for the society. To increase access and adherence to evidence-based fall prevention exercise, utilisation of older adults' own capabilities and digital health offers promising solutions. The aim of this thesis was to explore a digital programme as support for self-management of fall preventive exercises in community-dwelling older adults with a focus on participant experiences, behaviour change, and intervention reach.

Methods: This thesis comprises four papers, of which Papers I and II report from a feasibility study comparing two self-managed fall prevention exercise programmes, a paper booklet and the digital Safe Step programme. Papers III and IV describes a randomised controlled trial, which evaluates the effectiveness of the Safe Step programme in combination with educational videos, to reduce falls in comparison with educational videos alone. In Paper I, individual interviews were analysed with inductive qualitative content analysis to explore older adults' experiences of self-managing their fall prevention exercise. In Paper II, a deductive and inductive approach was utilised for the analysis of comments in questionnaires, individual, and focus group interviews to explore experiences of self-determination when using the Safe Step programme. The classification system of motivational and behaviour change strategies based on Self-determination theory was utilised as a categorisation matrix. An additional analysis of behavioural regulation for exercise according to the Self-determination theory was performed in this thesis. Paper III is a protocol for a randomised controlled trial, and Paper IV describes the recruitment strategies, and reach of this trial through comparison with another representative sample of adults 70 years or older by descriptive statistics.

Results: Results from Papers I and II show that the older adults appreciated the autonomy of a self-managed exercise programme. They expressed a capability to independently select exercises and manage their progression with support from the programme. However, some wanted the support of others in their training. The behaviour change support in the Safe Step programme was voiced as motivating and supportive, and the diversity of behaviour change strategies was emphasized as important to suit many older adults' preferences. In Paper II, the behaviour change support were found supportive for the basic human psychological needs according to the Self-determination theory, although, support for autonomy and competence were more clearly stated than for relatedness. An additional category was formed and proposed as an amendment to the classification system used as an analytical matrix. In the thesis, expressions of intrinsic and extrinsic motivations for doing the exercise from participants in Paper I were triangulated with results from the Behavioural Regulations in Exercise Questionnaire-2. The results confirmed the trend found in the qualitative analysis of more intrinsically motivated expressions in the group using the Safe Step programme. A study protocol was written that described the design of the Safe Step randomised controlled trial, including the aims, methodology and overall organisation of the research (Paper III). In Paper IV, the most successful recruitment strategy to the randomised controlled trial was identified as advertisement in social media. The recruited participants were predominantly women, highly educated, and frequently used applications or internet on mobile devices.

Conclusion: Finding of this thesis support implementation of fall prevention strategies through increased utilisation of older adults' self-management capabilities. Older adults' experiences of exercising with a self-managed digital exercise program can be understood as managing pieces of a personal puzzle and was shaped more by the sum of the features and behaviour change support in the programme than by parts of the programme. The Safe step programme seems to provide support for more self-determined exercise motivation, than a paper booklet, which can support maintenance of the new exercise routines. The older adults' experiences, as well as the characteristics of the participants reached, highlight the necessity for a variety of fall prevention strategies that reflect the diversified needs and preferences of older adults.

Keywords

Aged, falls prevention, digital health, eHealth, self-management, smartphone, digital technology, behavioural change support, Self-determination theory

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