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Long-term behavior change through lifestyle-integrated functional exercises (LiFE) in older adults

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Abstract

Background

The promotion of healthy aging is crucial in the face of demographic change. Fostering physical activity (PA) in older adults is a mean to do so (Bailey, Hillman, Arent, & Petitpas, 2013; Hamer & Chida, 2009; Reiner, Niermann, Jekauc, & Woll, 2013). However, more physical activity also increases falls risk due to a higher exposure to environmental hazards (Klenk et al., 2015). Since falls come along with severe consequences for individuals (e.g. hip fractures, loss of independence) and the society (e.g. costs for the health care system), preventing falls through balance and strength training is indispensable while promoting PA (Sherrington, Tiedemann, Fairhall, Close, & Lord, 2011). The Lifestyle-integrated Functional Exercise (LiFE) program was designed to prevent falls through functional balance and strength exercises and thereby increasing older adults' capability for 'safe' PA (Clemson et al., 2012). The novelty of LiFE lies in incorporating functional exercises into daily activities instead of executing them in a structured format. So, while watering flowers, individuals could stand on their toes and thereby train both strength and balance. LiFE is usually delivered through a series of house visits. A nationwide implementation is questionable due to the high resource intensity. Further, the underlying behaviour change process towards new, active habits has barely been examined so far.

As part of the larger LiFE-is-LiFE project (funding code 01GL1705A-D), the PhD project has two aims: First, a structural procedure for a group-based LiFE (gLiFE) program is developed. Second, the behaviour change process towards habit formation is conceptualized with the help of the Health Action Process Approach (HAPA; Schwarzer, 1992, 2008).

Method

An interdisciplinary research team developed a structured group-based LiFE format based on the Behavior Change Technique (BCT) taxonomy (Michie, van Stralen, & West, 2011), the Medical Research Council guidelines (Craig et al., 2008) and existing pilot studies on gLiFE from Canada (Fleig, Pomp, Schwarzer, & Lippke, 2013; Gibbs et al., 2015) and the US (Li, Comer, Huang, Schmidt, & Tong, 2018). A 7-week pre-post design employing a mixed method approach was used to test feasibility of gLiFE by adherence to gLiFE session, Likert-scaled questionnaires and a focus group. A single-blinded non-inferiority trial with a planned sample size of N = 300 older adults (> 70 years; faller and/or confirmed falls risk; community-dwelling) and two follow-ups (six months and twelve months after intervention start) is conducted in Heidelberg (Network Aging Research) and Stuttgart (Robert-Bosch-Krankenhaus). Participants will be randomized into the iLiFE or gLiFE condition. Both groups will receive seven intervention sessions and two booster phone calls four and six weeks after intervention period. Primary outcomes are falls per PA unit and intervention costs. Secondary outcomes are motor performances as well as psychosocial variables on the behavior change process (e.g. intention, planning and habit strength) which will be examined by using validated Likert-scaled questionnaires (e.g., HAPA-related variables; Schwarzer et al., 2007; Sniehotta et al., 2005) and tested via structural equation modeling.

Results

Intervention development resulted in a standardized trainer's manual. Special focus is paid on the use of group dynamics, e.g. exchanging experiences or collecting possible situations for implementing the LiFE activities. Six community-dwelling older adults (M = 71.7 years, 5 female) completed the pilot study. The gLiFE showed to be highly feasible, i.e. participants found the intervention highly acceptable and the LiFE activities useful for increasing strength, balance and PA, adaptable to individual lifestyle, appropriately difficult and safe. Focus group results show that participants experienced the exercises as functional and important and preferred the group format over individual home visits. Challenges with linking LiFE activities to daily routines and completing the paperwork were reported. The gLiFE concept was refined accordingly. Currently (October 2018), we are in the phase of intervention delivery. From November on, the first 6-month-follow up assessments will be conducted.

Discussion

gLiFE is a promising approach for promoting PA in older adults safely and cost-effectively. Long-term results will reveal if the gain of peer support in the group format will outweigh the decrease of individualization regarding physical and psychosocial outcomes. The understanding of the underlying behavior change and habit formation processes contributes to the design of effective falls prevention programs.

Key words: older adults, falls prevention, functional balance and strength training, health behaviour change, habit formation

Literature

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