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Delivery of strength and balance exercises for falls prevention amongst older people using digital technologies to replace face-to-face contact during Covid-19 home isolation and physical distancing

Briefing Paper

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Delivery of strength and balance exercises for falls prevention amongst older people using digital technologies to replace face-to-face contact during Covid-19 home isolation and physical distancing

Falls amongst older people are an important public health problem. Exercise interventions, particularly those targeting strength and balance, are effective in preventing falls[1 2 3] and have generalised health benefits[4 5 6] in older people. CMO guidelines recommend exercises at least twice weekly[7]. To be effective exercise needs to be an evidence-based programme, delivered to dose, challenging and progressive. There is strong evidence, from up-to-date reviews, that functional strength and balance exercises (a) prevent falls in community dwelling older people (reducing both rate of falls and number of fallers), (b) have psychological benefits including reducing fear of falling and improved mood, and (c) are cost effective in fall prevention[9 10].

Exercise is normally delivered by health and/or specialist exercise professionals during face-to-face classes or one-to-one home visits. These have been curtailed by Covid-19 lock down. Tens of thousands of exercise recipients will lose the benefit of their exercise rapidly if they do not continue during home isolation, with resultant increase in fall risk, fall incidence and use of NHS services. As the benefits of exercise are known to be lost rapidly once exercise is stopped, failure to identify substitutes for face-to-face delivery is likely to result in considerable adverse consequences to vulnerable older people. This will have immediate effects during home isolation, and in the months/years following the Covid -19 pandemic, thereby putting further demand on NHS services.

- What is the evidence that delivery of evidence-based exercise programmes can be achieved by using mHealth[a] approaches?

This briefing provides an overview based on a rapid review of reviews[11] and an ongoing review of apps for fall prevention[12]. An advantage of apps is that they could provide built in feedback on adherence and performance to health care professionals as well as the user, and these technologies appear to be quite good at promoting user adherence. Most assessments of apps compare them to doing nothing, or offering older people a traditional “paper and pencil” intervention. A core issue is that we already know that leaflets alone are often not sufficient to bring about behaviour changes[13].

This briefing considers the role of digital interventions in light of the current Covid-19 crisis.

General evidence for digital exercise promotion to older people

Our review of reviews[11] of apps and other mHealth technologies[b] in the promotion of activity, and reduction of sedentariness amongst older people reveals that:

- The use of mobile/smartphone app based interventions appears to be acceptable to older people.
- Older people appear to adhere to the use of apps (at least in the short term).
- Apps may be effective in decreasing sedentary time, increasing physical activity and physical fitness (over 3 or so months).
- Apps that are theory-based, include behaviour change techniques, clear instructions, and social and professional support may be more effective than those that do not.
- Apps should provide exercise/activity interventions that fit in with older people’s lifestyles and expectations and offer tailored interventions taking account of individual preferences and capabilities.
- Positive messages about the benefits of technologies for promoting active healthy ageing and independence are critical.
- Older people need to understand and appreciate the benefits they will gain from using an app, and those benefits need to be in accord with older people’s own lifestyle and aspirations. Emphasising staying independent is important.
- When introducing apps to older people the steep learning curve they may experience must be recognised and support supplied to help them become familiar with the app.

Which apps and websites provide suitable interventions?

Our review[12] provides an overview and evidence summary of apps and websites that are publicly available in the UK or currently in development, to support older people's engagement in strength and balance exercises. Each app or website was assessed on a number of criteria, (evidence for effectiveness and use of behaviour change techniques; apps: quality ratings using standardised Mobile App Rating Scale tool; websites: credibility using Health on the Net HoNcode criteria)

Given the state of the evidence to date, three of the apps currently available for public download, Otago Exercise Programme, LifeCurve, and WyseFit, could be recommended for use under the current pandemic conditions. However, none of these apps have been tested for effectiveness. Otago Exercise Programme app could be considered to have the strongest evidence-base of the available apps although Otago is probably most useful for those at higher risk, more functionally unfit and often older. Two apps under development also scored well (Standing Tall and Keep On Keep Up) and there are plans for both to be fast-tracked into public domain in response to Covid-19. However, currently (1st May 2020) they are not yet available.

Two of the websites contained demonstrations of evidence-based exercise programmes and scored relatively high on credibility (*profound.eu.com and betterhealthwhileaging.net*), and one website contained a high number of behaviour change techniques that might support engagement and adherence (*fallsassistant.org.uk*). These websites could be recommended to facilitate older people's engagement in strength and balance exercises in their own homes.

It should be noted that this is a rapidly changing landscape with many providers now offering exercise videos aimed at older people, many of these via YouTube and other similar platforms. It has not been possible systematically to search YouTube and other media for evidence-based exercise videos aimed at older people so that we could assess the videos against the same sorts of criteria as we have used to evaluate apps and websites. A number of collections of such resources have been started including that provided by Later Life Training and the Chartered Society of Physiotherapists. We recommend that a curated list of evidence-based resources is created and maintained by, for example, Public Health England.

Overall, although the research evidence must be interpreted with caution, given the current Covid-19 situation there is sufficient evidence to suggest that roll out of digital strength and balance exercise is preferable to large numbers of older people not receiving such interventions at all over the coming months.

How, and which older people should be included is an important consideration. Many older people are not digitally literate, especially the oldest age groups, women and those most marginalised[14], and thus using any digital platform will exclude these high risk groups. There is thus risk of widening the health divide unless mitigating action is taken to make digital connectivity available to excluded groups. Thus, in addition to rolling out apps, a widely distributed printed booklet may, despite limitations identified above, be useful in the short term to ensure all older people have some access to information about exercise.

If there is to be a move to digital delivery at scale, how to phase roll-of the out programme needs careful consideration and planning. It would seem reasonable that the first group to work with should be older people, whom pre-Covid-19 lockdown already had experience of strength and balance exercise regimens, had been assessed, and remain relatively well and stable in health terms (i.e. older people who were previously attending face-to-face exercise sessions). Roll out to other groups will need to follow successful initial implementation. Whilst very many older people will benefit from strength and balance exercises, how to implement these digitally in ways that are both safe and effective is likely to be challenging, since normally implementation involves face-to-face assessment to set a regimen appropriate for the individual.

Digital exercise interventions for rehabilitation following hospital discharge may therefore represent a second group, who would benefit if suitable assessments and initial training can be implemented during hospital inpatient stay. As we move out of lockdown, and face-to-face home visits become more possible for initial set up on a digital system, implementation of digital exercise interventions could be used to reduce the number of face-to-face interactions (and hence coronavirus transmission risk) that older people have with staff delivering exercise regimens.

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