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## Developing online fall prevention program: Older adult recommendations<sup>^</sup>

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### ABSTRACT

Falls are a critical public health problem for older adults making expanded access of evidence-based fall prevention programs to this population a priority. Online delivery could improve the reach of these needed programs, however associated benefits and challenges remain poorly explored. This focus group study was undertaken to gather older adults' perceptions regarding the transition of face-to-face fall prevention programs to online formats. Content analysis was used to identify their opinions and suggestions. Older adults had concerns related to technology, engagement, and interaction with peers that they valued during face-to-face programs. They provided suggestions they felt would improve the success of online fall prevention programs, especially including synchronous sessions and getting input during program development from older adults.

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### Introduction

Even before the COVID-19 pandemic, broadening the reach of health promotion programs using online delivery was of interest to interprofessional clinicians and researchers to increase older adults' access to community-delivered evidence-based programming. Fall prevention and fall risk management interventions targeting community-dwelling older adults are of particular importance because of the substantial impact of falls on older adults, including fatal and non-fatal injuries, functional impairment, hospitalizations, and premature nursing home placement.<sup>1–4</sup> Preventing older adult falls remains a priority for the National Center for Injury Prevention and Control at the Centers for Disease Control and Prevention.<sup>5</sup> Older adults can decrease their risk for falls by participating in evidence-based interventions,<sup>6,7</sup> and several face-to-face, multi-component group interventions are available that have strong evidence for reducing falls or fall risk.<sup>8</sup> However, older adults' participation in these programs has been low and barriers exist to program implementation.<sup>9,10</sup> Identifying strategies to increase the reach of this type of evidence-based fall prevention program for community-

dwelling older adults would support a public health priority, and online delivery provides a promising approach.

Fall prevention interventions in the community setting are not as widely available as needed due to the resources required, including trained facilitators, space, and program materials.<sup>11,12</sup> Access to programming is particularly limited in rural areas.<sup>13</sup> Beyond limited program availability, some older adults are unable to leave their home and others prefer home-delivered programs.<sup>14</sup> Further, the COVID-19 pandemic resulted in the limited ability to meet in person, sparking further interest in online programs. Online options provide flexibility for participants who work, cannot get out, or have other responsibilities, such as caregiving, and may increase participation among targeted end users by expanding delivery since participants no longer need to be in the location where the program facilitators are located. Online interventions can also offer flexibility and decreased time and costs for health professionals or speakers to travel to deliver interventions.

Online technology has already been used to deliver a variety of health promotion interventions to adults and older adults. For example, the widely disseminated evidence-based Chronic Disease Self-Management Program has been successfully delivered online with outcomes equivalent to those in the in-person program.<sup>15</sup> Systematic reviews have identified benefits of general internet-delivered interventions for health behavior,<sup>16</sup> caregiver interventions,<sup>17</sup> and

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exercise programs for older adults.<sup>18</sup> Another review identified benefits to older adults from a variety of digital online interventions.<sup>19</sup> Nahm<sup>20</sup> identified that program developers must consider issues related to older populations, such as sensory changes (e.g., vision, hearing), needs, preferences, and abilities of older users, and another study provided general suggestions for online programs.<sup>21</sup> Few studies targeted older adults specifically, and the benefits and challenges associated with online delivery of fall prevention programs for community-dwelling older adults, particularly the multi-component, multi-session type of programs we are interested in, remain poorly explored.

Although a “digital divide” exists, and some older adults do not have the skills or ability to engage online, the uptake of digital technology is growing rapidly among older adults.<sup>21</sup> Baby Boomers, many of whom have been working, will have more technology skills as they move into later life, further increasing use of digital tools in this population.<sup>22</sup> We have yet to determine the full increase of technology use among older adults that occurred during the pandemic, as organizations quickly pivoted to move programs online. Even before 2020, the Pew Research Center reported that 67% of older adults had broadband and used the internet, an increase of 55% over the prior 2 decades.<sup>23</sup> As a result, the purpose of this study was to gather older adults’ perceptions regarding the transition of face-to-face fall prevention programs to online formats.

## Methods

We used focus group methodology to elicit perceptions and recommendations regarding online fall prevention programming. Focus groups provide an efficient process for obtaining qualitative data and allow multiple participants to discuss and share opinions and experiences.<sup>24</sup> We held two focus group sessions of older adults.

### Sample and setting

After obtaining IRB approval, older adult volunteers were recruited via e-mail through a local education program that had offered multiple Matter of Balance (MOB)<sup>25</sup> classes in the community. Eligible participants had attended a face-to-face MOB program within the past 2 years, were 60 years or older, able to speak and read English, and were able to attend a focus group meeting in person. Participation in the MOB was required to elicit participants’ opinions about activities typically included in a fall prevention program and how they might work online. Potential participants were instructed to call the researchers, and if they met the inclusion criteria and were interested, they were invited to attend a meeting. The first 24 eligible older adults who could attend the focus groups were scheduled. The focus groups were held at libraries in two different geographical regions of a large city where free parking was available.

### Procedures

Participants signed a consent form and completed a brief demographic questionnaire immediately before participating in the discussion. They reported their age, gender, education, marital status, and race/ethnicity. The moderator used an interview guide and asked participants about their experiences with the face-to-face MOB program they attended and what they found helpful. They were then asked about their experiences with online learning, and what they thought program developers should consider in designing an online version of a program like MOB to help older adults attain similar benefits to the program they experienced. The groups discussed different types of activities typically included in fall prevention interventions, such as exercise and group activities. Each focus group was approximately

90 min long and audio-recorded. Refreshments were provided, and participants received a \$25 gift card to a local grocery store.

### Analysis

The focus group recordings were transcribed verbatim and used with field notes for analysis. Directed content analysis was used to identify focus group participants’ perceptions based on the predetermined targeted areas of inquiry.<sup>26</sup> Participant ideas were summarized along with their recommendations regarding online fall prevention programs.

## Results

Twenty older adults participated in one of the two focus groups. They were mostly women (17 of 20) who had a mean age of 74.3 (SD = 9.8) years; less than half were married (7 of 20, 35%), and three-quarters (15 of 20) were White. They had a mean of 15 (SD = 3.4) years of education. The results outline the participants’ experiences with a fall prevention program and their concerns and suggestions for developing online programs.

### Prior experience

The older adults were glad they had signed up to take the MOB program. Several participants signed up for the class because they saw a flyer or write up about it, were interested in the topic, or had experiences with their own parents falling later in life. Some were concerned about falling or had experienced a fall. A female participant said after her fall: *“it did cause me to pause and do a little inventory and say hey girl, you better watch your step a little more closely. I wanted to find out what I could do to be more aware of my surroundings, and to strengthen my muscles.”* She signed up because she felt this program would help her.

Focus group participants felt that what they learned in MOB about falls, and the things they could do to prevent them, was beneficial. Several topics were reported as especially helpful included improving home safety, starting to exercise, and safely increasing activities. When asked about the most helpful thing from the program, one participant said *“I think the fact that we’re not alone in our fear or apprehension about falling, and to be able to express that and discuss it with other people.”* They appreciated learning that others had worries about falling, and they were not alone in these concerns, *“...oh my gosh, they have the same issue you have and it makes you feel like you are human.”*

Taking steps to prevent falls was an important take-away from the class. *“I feel like it gives you power ...I didn’t have a fear of falling, but after hearing people’s falls it made me realize, again, the seriousness, and then now I changed my behavior and I feel more powerful because of that.”* Writing down a plan was helpful for some participants. Many participants said they did make changes after the MOB program, but a few had stopped exercising and felt they needed a booster or wished there was an advanced program or “part two.”

The older adults were consistent in supporting the group format as the most important thing about the program. They felt a connection with their fellow participants, and one participant stated that her group was still getting together socially one year later. Another stated: *“the other thing that I found really beneficial and helpful was the socialization and the sharing of ideas, and what is out and around our area. There’s a lot going on that you learn from other people that they participated in, and that was a really beneficial thing for me, that sharing.”*

### Concerns about online programs

There were quite a few concerns about an online program. These concerns included challenges that some older adults might have, such as limited Internet access, the expense of equipment, or technology glitches that are common. An online program would have to be manageable, “really easy to do.” “A lot of seniors are not computer literate.” Distrust of the Internet was noted, as one participant stated: “I really don’t even trust half the information I get on there, so it’s like I just don’t find it a good resource.” Another worried about fake identities of other online participants. A few comments were related to staying engaged with a class in an online format. “. . . I don’t think people in our age group are motivated enough to really do a class like this online. . . . you might start, but I don’t think you would complete the class to be honest.”

The main concern about online programs was the potential loss of social connection and camaraderie that the face-to-face programs offered. Specifically, several felt that an online class would prevent them from making or meeting with friends. “Humor is important. . . . we laughed and shared so much I don’t see how it’s possible (to do that online)”

Alternatively, some participants were positive. “I think as we are aging, more of us have some computer knowledge that will be beneficial as we age.” Most participants had some computer experience, at least with e-mail, internet searches, or watching videos online, although few participants had taken an online class. Prior positive experiences with online learning appeared to foster older adults’ enthusiasm toward online fall prevention programs. One participant reported previous experience taking an online course and stated that she enjoyed the class and was most positive about the potential for online fall prevention programs.

### Recommendations for program developers

While participants had some reservations about online programs, they provided suggestions, and many were positive about the potential of this method. They identified how this might benefit others who could not get to a class or who did not have a class available. Besides being easy to use, the online class would need to have more than a series of slides or written resources. “I don’t think if you were reading it as opposed to discussing it, it makes as big of an impact.”

While they liked the idea of having videos of content, they could look at again later, the key recommendation was to create ways for class participants to interact with other members, leaders, and other professionals online, and highlighted the importance of providing numerous opportunities to do so. As one participant said, “we would need to be able to ask questions and get answers.” They wanted an online program to provide socialization and sharing with the other class participants they described when they took their in-person fall prevention program. Some participants agreed that taking the class with a buddy or being paired with a buddy might be helpful.

The older adults wanted access to learning materials to support the course contents, such as videos presentations, and visual examples of fall hazards. They suggested handouts, and discussion boards might be helpful if someone answered. They liked the idea of filling out assessments or quizzes online and receiving individualized feedback. One suggested “give an assignment each week and discuss it” that might benefit participants. They encouraged testing the program with older people.

For learning exercises, participants wanted demonstrations of what to do and how to do it, and to be able to connect with the exercise instructor and make sure they were doing things the right way. Some wanted more exercises than were provided in the class. Participants liked the idea of an online journal to track their progress on goals especially exercise. One stated “it would give some

accountability” and “it might help continue to motivate us to continue the exercises.” They liked the idea of having DVDs or videos to follow after the program ended, or additional exercise programs. After talking through different ways the online class might be designed, some participants were more positive in thinking an online program could be successful, one stating “It’s dawning on me that this could work.”

### Discussion

The need to expand the reach of fall prevention programs has been a national priority and increasing delivery options is an important approach. Online technology offers significant benefits and programs can be designed to address the diverse learning styles and preferences of potential older learners. Many health promotion programs for older adults, including fall prevention programs, pivoted to online delivery due to the COVID-19 pandemic, demonstrating this method can be successful. For example, Maine Health, which licenses and trains individuals to offer the MOB program, offered a virtual option of the MOB program.<sup>27</sup> However, the potential challenges must be considered. The perceptions of the older adults in this study are valuable for developers to consider when designing online fall prevention programs for older adults, which have relevance for other health promotion programs.

It is important to note that selected programs have engaged older adults online for some time. For example, in an analysis of registrants of free Massive Open Online Courses (MOOCs) in 2016, [Liyana Wardena](#) and [Williams](#)<sup>28</sup> found that up to 16% of participants were adults over the age of 56. Overall, the digital divide has been narrowing,<sup>21</sup> and the COVID-19 pandemic may have accelerated this process. Hopefully, we can put to bed the ageist and antiquated idea that older adults will not or cannot participate in online programs. This is not to say that challenges do not exist for some older adults to engage online, and developers need to take these issues into consideration. However, health educators need to identify ways to increase the availability and acceptance and use this mode of delivery to expand the reach of fall prevention, supporting the Healthy People 2030 goal of reducing fall-related deaths among older people.<sup>29</sup>

The older adults in this study identified potential challenges in online interventions for developers to consider. Specifically, consistent with recommendations by [Sangrar](#),<sup>30</sup> all aspects of a program should be designed to be age-friendly and tested to be appropriate for older adults prior to implementation. Universal design concepts, visual elements, and writing style need to be considered along with an easy-to-navigate platform. Older adults may need additional training and support to participate in such programs, or referral to computer training prior to taking a class. Participants would benefit from a variety of activities to engage in during a program, including lectures, discussions, handouts, chats, videos, quizzes, assessment tools, etc. Developers should adopt best practices for developing and delivering online education, which are used in health education and other settings.<sup>31,32</sup>

The strongest recommendation from our participants was to find ways to replicate the social interaction that occurs in on-site group courses, and some were uncertain that this could be accomplished successfully. Group interaction provides critical benefits to participants in many health promotion programs. For example, social connection and interaction have been identified as important elements supporting the success of group exercise,<sup>33</sup> caregiving,<sup>17</sup> and as an added benefit of health promotion programs.<sup>34</sup> The social aspects may also increase regular participation, as our focus group participant noted, older adults may attend more sessions to make or meet with friends.

The second significant benefit of group interaction is to support behavior change. The benefit of group interventions to foster adaptive behavior change is well documented. Lorig and colleagues<sup>35</sup>

**Table 1**  
Summary of Considerations for Developing Fall Prevention Online Programs for Older Adults.

Issues	Considerations
Accessible to those who do not have access to community programs or who can't get out to a program	<ul style="list-style-type: none"> <li>• Offer programs online</li> <li>• Consider the target audience in developing schedules (synchronous, asynchronous, or hybrid)</li> <li>• Refer older adults without internet to libraries, senior centers, or other community sites that offer computers</li> </ul>
Lack of computer skills	<ul style="list-style-type: none"> <li>• Provide computer training or refer participants who need it to training programs.</li> <li>• Provide technology support accessible throughout the program.</li> </ul>
Concern about security	<ul style="list-style-type: none"> <li>• Discuss safety and integrity of the program with participants</li> <li>• Link with trusted local groups for recruitment (e.g. Area Agency on Aging, local hospital)</li> </ul>
Age-friendly online platform	<ul style="list-style-type: none"> <li>• Consult an expert educational designer</li> <li>• Avoid complex content and excess scrolling on web pages</li> <li>• Provide simple navigation tools</li> </ul>
Support learning for older participants	<ul style="list-style-type: none"> <li>• Address aging and sensory changes (color contrast on the screen, large enough font sizes, etc.)</li> <li>• Work with educational designer to develop online tools that can help to engage participants (i.e., quizzes, journals, recorded lectures or older adult stories, discussion board, voice thread, etc.)</li> <li>• Use simple language and avoid jargon in verbal and written materials</li> <li>• Incorporate live or recorded content from health professionals, older adults, etc.</li> <li>• Pilot handouts and program components with older adult beta testers</li> </ul>
Connect participants with others for support, sharing and problem solving	<ul style="list-style-type: none"> <li>• Provide at least some synchronous live sessions</li> <li>• Include a chat room</li> <li>• Guided discussion board with peer or coach</li> <li>• Include activities to do with an assigned buddy or selected peer, or to discuss with family or friends</li> </ul>
Support for increasing engagement in physical activity	<ul style="list-style-type: none"> <li>• Include live session to teach participants how to do exercises</li> <li>• Review safety considerations with participants</li> <li>• Provide videos for review or practice</li> <li>• Include handouts with pictures and directions</li> <li>• Provide contact for any concerns or issues</li> </ul>

have long reinforced the theoretical underpinnings from Bandura's work that group engagement leads to enhanced self-efficacy for behavior change through guided group discussions to support social persuasion, sharing of experiences, and problem-solving among participants. Lorig et al.,<sup>36</sup> were able to successfully do this online with the Chronic Disease Self-Management Program and offshoots, providing participant connection through chats and discussion boards. Developers need to prioritize online strategies that engage participants with each other and with professionals. Programs should be evaluated to identify which online strategies are efficacious and support social support and connection for successful program outcomes.

The study findings may be limited by drawing from a small number of study participants' experience with one in-person group program as a starting point for discussion; the older adults were reflecting on their specific experiences with MOB program in one geographic area before the pandemic. However, MOB has multiple elements common to many other health promotion programs that include exercise and psychoeducation, broadening the implications of these findings. Further, this study examined a multi-component program; further research could explore the utility of a variety of other educational approaches.

## Conclusion

Online fall prevention programs have great potential to increase the reach of evidence-based fall prevention programs to homebound, rural, and other community-dwelling older adults who cannot access an in-person program. The stakeholders in our study provided valuable recommendations for developers of online fall prevention programs and highlighted the importance of incorporating age-friendly strategies to make programs accessible to older adults and including end users in all stages of development. Research is needed to examine the efficacy of online fall prevention programs to determine best practices for online fall prevention programs for community-based older adults (Table 1).

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## Declaration of Competing Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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