



Bringing evidence-based fall prevention into the home through connected exercise

TOPICS: Fall prevention & safety | Home & community | Remote monitoring | Connected devices & wearables | Human support & coaching | Usability & inclusive design



About the initiative



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The Laboratory of Exercise Physiology and Physical Performance at Brigham and Women's Hospital/Harvard Medical School partnered with Best Buy Health to design, develop, implement and evaluate a digitally enabled, home-based fall prevention exercise program designed to support healthy aging and independent living among community-dwelling older adults at increased risk of falls.

The 12-week program enrolled community-dwelling adults aged 65+ at increased risk of falls and combined progressive strength, power and balance exercise, an adaptive walking program, a tablet-based exercise platform, wearable sensors, motivational messaging, and regular remote coaching from an exercise physiologist.



The opportunity

- Extend evidence-based fall prevention exercise beyond traditional in-person settings.
- Help older adults at increased risk of falls maintain mobility, confidence, and independence at home.
- Combine the convenience of home-based delivery with individualized progression and ongoing support.



The challenge

- Exercise can reduce fall risk and support physical function, but access, uptake, and adherence to traditional programs remain challenging for many older adults.
- Effective fall prevention exercise requires appropriate intensity, progression, and adherence, which can be difficult to support remotely.
- Digital delivery can increase access and autonomy, but technology alone may not provide the individualization, motivation, and human interaction needed to sustain engagement.



The approach

- Translated evidence-based exercise prescription into a digitally delivered program combining progressive strength, power, balance, and walking exercises with a tablet-based platform and wearable sensors
- Used exercise-physiologist oversight to monitor adherence, individualized exercise progression and walking goals, and provide behavioral and technical support
- Progressively adapted exercise volume, intensity, complexity, and movement speed based on participant feedback and performance.
- Partnered across Brigham and Women's Hospital/Harvard Medical School and Best Buy Health to combine expertise in exercise science, aging, digital health, user-centered design, and implementation
- Iteratively refined the digital platform and intervention based on participant feedback



The impact

- ✓ Achieved approximately **84% adherence**, excellent acceptability, and high wearable compliance.
- ✓ Reported **no serious intervention-related adverse events**.
- ✓ Participants reported improvements in functional strength, balance, activities of daily living, confidence, and participation. .
- ✓ Qualitative findings identified exercise-physiologist coaching as a fundamental component supporting motivation, adherence, and engagement with the technology and exercises.
- ✓ Participant feedback identified opportunities for next-generation digital exercise delivery, including greater personalization, automated performance feedback, live virtual interaction, and expanded exercise progression

Evidence from this initiative

Bajdek N, et al. *Feasibility of a Multicomponent Digital Fall Prevention Exercise Intervention for At-Risk Older Adults*. Journal of Frailty & Aging. 2024.

Farrell S, et al. *A Qualitative Analysis of a Digital Fall Prevention Exercise Program for Older Adults With Increased Fall Risk*. Journal of Applied Gerontology. 2026.

Laboratory of Exercise Physiology and Physical Performance

Case study



Connected Health

Collaborative Community by DiME

Brigham and Women's Hospital | Harvard Medical School

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