



Geras

Centre for Aging Research

[jeh'ruhzh] *noun* - Greek for old age

Innovation and Technology



We are grateful for the generous donation to our Research Centre from Margaret and Charles Juravinski.

A special thank you to the support of Hamilton Health Sciences Foundation, McMaster University, Department of Medicine, the St. Peter's & McMaster Chair in Aging and MIRA for their partnership and collaboration.

INNOVATION & TECHNOLOGY



OUR STRATEGIC PLAN

MISSION

To make life better for older adults with high impact research tackling the biggest challenges facing our aging population.

VISION

Promoting healthy aging to help people age with dignity and independence.

STRATEGIC DIRECTIONS

- 1** Advancing research innovations, new models of geriatric care, and clinical interventions.
- 2** Collaboration among healthcare professionals, researchers, older adults, and caregivers.
- 3** Training the next generation of leaders in aging research.

SOLUTIONS FOR REAL LIFE

The GERAS Centre for Aging Research provides a real-life environment where we can work together with patients, families, researchers and community industry partners to co-create and test innovative solutions to improve patient care and quality of life.

GERAS is uniquely positioned to offer a dynamic and controlled environment where product and innovation testing and research evaluation happens seamlessly. Through access to real clinical settings, GERAS collaborates with industry and innovators to rapidly develop and adapt prototypes and research protocols. The most important benefit is that innovations can have a positive impact on patient care more quickly.



THE NEXT GENERATION OF HOSPITAL BED

Hospital beds are where patients spend most of their time during the treatment and recovery stages of their hospital stays. The GERAS Centre for Aging Research in partnership with Aply Medical, a Norwegian medical innovation company, is redefining what a hospital bed can be from the ground up. The bed has sensors to monitor patient health data and is designed to model the human spine to assist with patient transfers.

Essentially all of the beds in today's market share the same core design principles - three platforms that can be adjusted at two points



to move the upper and lower parts of the body upwards or downwards. It's a solution that doesn't allow for much customization, flexibility or convenience, today's hospital beds can actually contribute to clinicians getting injured. The hope is Aply Bed will improve the quality of care for patients, reduce injury and reduce costs.



BRAIN HEALTH

EARLY DETECTION OF NEURODEGENERATIVE DISEASE

We have an industry-academic partnership with Darmiyan, an innovative software company based out of San Francisco USA, and working in collaboration with the Centre for Aging & Brain Health Innovation (CABHI) at Baycrest, Toronto Canada. Together our research tested how accurate and reliable Darmiyan technology is in predicting and detecting Alzheimer's disease. Brain See software earned FDA breakthrough designation to identify brain changes not be visible on traditional magnetic resonance imaging scans.

Darmiyan's mission is to leverage artificial intelligence and 40 years of cutting edge neuroscience research to address the biggest healthcare challenge of our time: detecting neurodegenerative disease at early stages when treatments matter. All tests and technology use standards of excellence including the 4 pillars: high accuracy, non-invasiveness, seamless integration, and accessibility.

BRAIN HEALTH; FRAILITY

LOOKING FOR PEACE OF MIND AT HOME



We have partnered with Chirp to help caregivers remotely monitor and support older adults. Chirp technology offers a convenient and dignified approach to home monitoring by using privacy preserving sensors. No wearables, buttons to push or devices to charge. Caregivers get peace of mind through real-time notifications and weekly activity reporting sent to their smartphone about movement patterns and falls prediction.





INNOVATION & TECHNOLOGY

ALL IN ONE MOBILITY SOLUTION

We partnered with ORCHIDlift to test drive their innovation. ORCHIDlift is a manual all-in-one mobility assist device. It will enable caregivers to lift and transport care recipients/loved ones who lack the strength or mobility to stand. It is an adaptive modular design that can be used for multiple tasks including lifting, transferring, exercise and rehabilitation.

The ORCHIDlift mission is to create and design simple, innovative solutions for the challenges millions of caregivers face every day. The product helps customers provide the best care they can by enhancing their quality of life experience. The ultimate goal is to provide family caregivers with consumer-friendly medical devices that rival the big and expensive equipment seen in hospitals.

RESILIENCE & FRAILITY

MOVING EVIDENCE INTO PRACTICE WITH TECHNOLOGY

Working with the CentRE for dAta science and digiTal hEalth (CREATE) team, we developed the Fit-Frailty Assessment and Management App is a comprehensive measure of frailty. It was designed to help save time in busy clinical settings and be easily completed by older adults and caregivers. The full, interactive assessment is completed in person and includes physical performance measures. Available for download in the Apple Store.

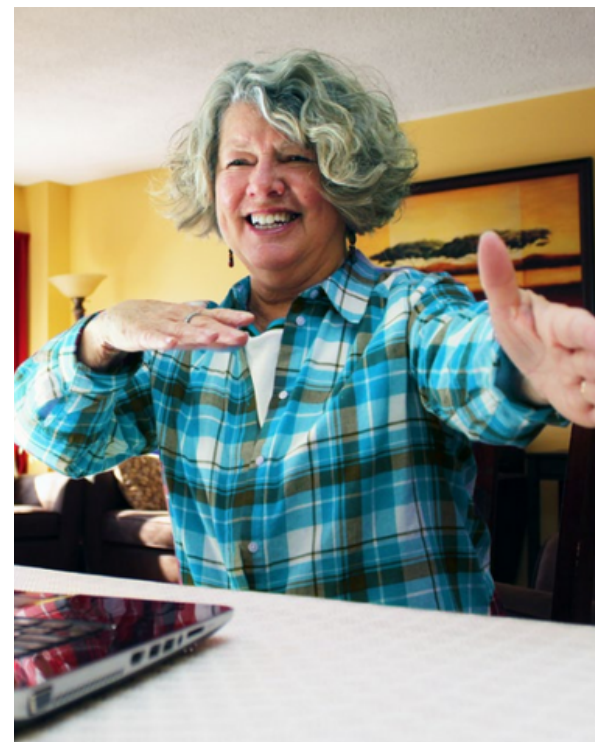


TRAINING THE NEXT GENERATION

EMERGING ENTREPRENEUR IN AGING AND TECHNOLOGY

Dr. Patricia Hewston was 1 of 2 national recipients of the 2021 Emerging Entrepreneur Awards to accelerate solutions for older adults by expanding the virtual GERAS DANCE across Canada.

"Emerging entrepreneurs are the lifeblood of the innovation space, and advancing their important work is critical to CABHI's mission - to help older adults live better lives wherever they are," says Dr. Allison Sekuler, Managing Director, CABHI, Sandra A. Rotman Chair in Cognitive Neuroscience and Vice-President of Research, Baycrest. "We're delighted to collaborate with AGE-WELL in supporting such talented award recipients to benefit older adults, people living with dementia, and caregivers across Canada."





RESILIENCE & FRAILITY

VIRTUAL FRAILITY REHABILITATION RCT

To address the immediate impact of COVID-19 policies, our proof of concept randomized controlled trial aimed to understand how to best build resilience among vulnerable seniors in our community through virtual at-home rehabilitation services (socialization, exercise, nutrition, and medication support). Specifically, we examined if our GERAS virtual multi-modal rehabilitation program is feasible and improves physical and mental health, and reduces frailty in community-dwelling older adults compared to the socialization alone group. We would like to thank the Juravinski Research Institute (JRI) and donors who have generously funded the GERAS Virtual Frailty Rehabilitation at Home during COVID-19 Study. The funding from JRI has been instrumental in addressing the needs of a vulnerable population and has had a significant impact on our research design and health related outcomes.



INNOVATION & TECHNOLOGY

CENTRE FOR AGING + BRAIN HEALTH INNOVATION (CABHI) DISCOVER AND ADAPT PROGRAM

We have been awarded a Centre for Aging + Brain Health Innovation (CABHI) Discover and Adopt Program grant to support care delivery with training to introduce, implement, and sustain innovations that address our pain points. The GERAS Centre for Aging Research with Hamilton Health Sciences healthcare providers will identify barriers to workflows and patient care of older adults.

This project will test and adapt healthcare innovations (e.g., products, programs, or services) that can improve the quality of care and quality of life of those we serve. The design and adapt program is designed to support organizations with building the skills required to introduce, implement, and sustain innovations in their own settings.

EVALUATION VIA TECHNOLOGY



INNOVATION & TECHNOLOGY

MEASURING GAIT ONE STEP AT A TIME

We purchased a ProtoKinetics Zeno Walkway and gait analysis system for our testing and innovation lab. Gait analysis systems can assist clinicians in identifying abnormalities and asymmetries in gait to provide a window to study disease, monitor patient progress, and design treatment interventions for a multitude of conditions. This system helps researchers identify deviations in gait function to better assess the baselines and effectiveness of interventions.

EQUITY DIVERSITY INCLUSION

EQUITY DIVERSITY AND INCLUSION FOR ALL

At the GERAS Centre for Aging Research we are committed to equity, diversity and inclusion for all. As a part of our technology research, we provide iPads with internet service to study participants who do not have computers, smartphones, or internet at their homes. We have digital skills training for older adults to improve digital literacy. Our goal is to make study participation more accessible and decrease barriers for older adults.



INNOVATION & TECHNOLOGY

TRACKING STEPS, SLEEP & SEDENTARY BEHAVIOUR

The ActiGraph GT9X Link captures and records high resolution raw acceleration data, which is converted into a variety of objective activity and sleep measures using publicly available algorithms developed and validated by members of the academic research community. The Bluetooth Smart ActiGraph GT9X Link includes a gyroscope, magnetometer, and secondary accelerometer to deliver valuable information about movement, rotation, and body position. We utilize this technology in our research.





Promoting healthy aging to help people age with dignity and independence

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