

ENVIRONMENTAL SCAN

Healthy Aging Interventions, Programs, and Initiatives: An Environmental Scan

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Summary

- Canadians are generally living longer in good health than previous generations. However, there is still a high risk of frailty among community-dwelling older adults. With the older adult population steadily rising in Canada, it is important that effective interventions, programs, and initiatives are developed to support the healthy aging of older adults in the community.
- Most of the interventions identified from the literature review showing benefit in healthy community-dwelling older adults focused on improving mobility and balance and/or preventing falls. Several other interventions were beneficial for improving physical and cognitive function, nutrition, and quality of life, and decreasing social isolation. Vaccinations were also found to be effective for preventing influenza, herpes zoster, and pneumonia infections in older adults.
- Healthy aging in the community is being promoted across Canada through programs and initiatives delivered at the national, provincial, regional, and community level. Areas of focus include falls prevention, increasing physical activity, deprescribing, improving nutrition, decreasing social isolation, and improving access to services that allow older adults to age in place (e.g., help with yard work, housekeeping, and home repairs).
- Innovative approaches are being used across Canada to ensure that healthy aging interventions in the community are practical and sustainable given limited health care resources. Some programs and initiatives are using collaborative partnerships between diverse sectors such as government, not-for-profit, and community organizations. Others are focused on engaging older adults in the leadership, outreach, training, and delivery of healthy aging programs and initiatives.
- Some Canadian programs have been evaluated and have yielded positive results in terms of healthy aging outcomes. International evidence-based healthy aging resources are also available, some of which have been implemented in Canada.

Context

The population of older adults in Canada has been steadily increasing. As of July 1, 2019, there were an estimated 6.6 million Canadians older than 65 years (accounting for 17.5% of the total population).¹ It is projected that by 2036, older adults will represent 23% to 25% of the total population (up to 10.9 million).² Although people living in Canada are generally living longer in good health than previous generations, there is still a high risk of frailty among community-dwelling older adults.³ Currently, an estimated 1.5 million older Canadians are considered medically frail.⁴ While there is no consensus regarding the definition of frailty, it is generally seen as a state of vulnerability that becomes more prevalent with age, accompanied by various indicators including unintentional weight loss, weakness, exhaustion, slow gait, and lack of physical activity.⁵⁻⁷ Frailty increases the risk of numerous negative health outcomes in older people including falls-related injuries, incident disability, hospitalization, long-term care or nursing home placement, dementia, and death.⁸ Frailty is also linked to a higher expenditure of health care resources. The operating costs to care for Canadians older than 65 living in long-term care facilities is approximately \$31 billion dollars annually.⁴ The direct health care costs associated with falls in older adults is estimated to be \$2 billion annually.⁹

Due to the significant clinical and economic burden of frailty, developing effective interventions and programs to support the healthy aging^a of older adults in the community has become an increasingly critical issue for community leaders and decision-makers across the country. Research has shown that frailty and the severity of chronic diseases, cognitive decline, and disability later in life can be prevented, minimized, or delayed using interventions that involve lifestyle changes and the maintenance of intellectual and social activities.¹¹ The purpose of this Environmental Scan was to gather information on interventions, programs, and initiatives to promote healthy aging and prevent frailty in healthy community-dwelling older adults.

Objectives

The key objectives of this Environmental Scan were to:

- identify interventions from the literature that have demonstrated benefit in promoting and maintaining physical, mental, or social well-being in healthy older people who are living in the community
- identify and describe specific programs, interventions, and initiatives that are being used in Canada and internationally to promote health aging and prevent frailty.

Methods

The findings of this Environmental Scan are based on a review of the literature, responses received from a survey, and an internet search. A description of these three components follows. Table 1 outlines the criteria for information gathering and selection.

^a Health Canada defines healthy aging as: "A lifelong process of optimizing opportunities for improving and preserving health and physical, social and mental wellness, independence, quality of life and enhancing successful life-course transitions."¹⁰

Table 1: Components for Information Screening and Inclusion

	Inclusion	Exclusion	
Components	Population	<p>People considered “healthy” older adults (i.e., approximately 60+ years of age and older) who are living independently in the community</p> <p>*A cut-off age of 60 was used for the survey in keeping with the current threshold used by the United Nations to define older adults.¹² However, a more conservative cut-off of 50 years was used when screening findings from the literature and internet searches in order to capture some relevant interventions, programs, and initiatives for healthy aging that are available to younger individuals.</p>	<p>People with a history of frailty, cognitive impairment (including dementia and Alzheimer disease), or other chronic medical conditions</p>
	Intervention	<p>Health-related interventions or programs provided at home or in the community aimed at promoting, improving, or maintaining physical, cognitive, and mental health and preventing frailty including:</p> <ul style="list-style-type: none"> • promoting physical activity, exercise, and falls prevention • ensuring a healthy diet and nutritional support, and addressing malnutrition (excluding supplement-only interventions such as vitamins and herbs) • preventing social isolation, loneliness, and depression • promoting uptake of vaccinations • deprescribing inappropriate medications 	<p>The following programs, interventions, or initiatives were excluded:</p> <ul style="list-style-type: none"> • those aimed at younger adults and children • those focused on reversing frailty (reablement), improving cognitive impairment, or slowing the progression of dementia • clinical interventions offered by health care professionals in primary, secondary, or tertiary health care settings (including screening for frailty or other health conditions) with the exception of deprescribing and immunization • non-health/health technology interventions, or interventions that are not part of a program (including community/environmental design, pet ownership, self-management resources) • social assistance programs • guidance documents or initiatives, including frameworks, strategies, recommendations, and guidelines
	Settings	<ul style="list-style-type: none"> • Home • Community 	<ul style="list-style-type: none"> • Health care settings • Assisted living/long-term care facilities • Nursing homes
	Outcomes	<ul style="list-style-type: none"> • Reduction in hospitalization • Falls reduction • Reduction in admission to assisted living, long-term care, or nursing home facilities • Delayed cognitive decline • Increased social engagement • Reduced social isolation, loneliness, and depression • Increased levels of mobility, fitness, and physical activity • Improved diet and nutrition 	<ul style="list-style-type: none"> • Reversal of frailty (reablement) • Improvement of cognitive impairment/dementia • Improved chronic disease management • Cost-effectiveness

Research Questions

The literature review, survey, and internet search components of this Environmental Scan aimed to address the following questions:

1. What interventions have been shown to have evidence of benefit for promoting healthy aging or preventing frailty in healthy older adults living in the community?
2. What healthy aging programs, interventions, or initiatives are being offered in centres across Canada?
 - 2a. Which of these have been evaluated and shown to be effective?
3. What evidence-based programs are offered internationally to support healthy aging?

Literature Search

A limited literature search was conducted by an information specialist on key resources, including PubMed, Cumulative Index to Nursing and Allied Health Literature, the Cochrane Library, the University of York Centre for Reviews and Dissemination databases, and the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and other keywords. The main search concepts were aging, frailty prevention, healthy aging, alternative therapies, social isolation prevention, and community-dwelling individuals. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or network meta-analyses. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014, and November 10, 2019. Regular alerts updated the search and citations retrieved until June 2, 2020, were incorporated into the report.

Survey

The survey comprised eight questions and used the SurveyMonkey platform. The questions were reviewed by external stakeholders and piloted within SurveyMonkey by independent CADTH researchers who were not involved with the project. The questions consisted of a combination of dichotomous (i.e., yes or no) and open-ended questions (see Appendix 1). The questions were designed to capture the following:

- interventions that are currently being used in Canada to promote healthy aging or prevent frailty
- whether any of these interventions had been formally evaluated
- ongoing research or new initiatives to promote healthy aging in Canada.

The survey opened on December 12, 2019, and responses were received until February 13, 2020. Two email reminders were sent to non-responders. The survey attempted to capture information from across Canada, but not necessarily from every jurisdiction. The survey was distributed via email to key agencies, select stakeholders, and clinical experts involved in older adults' health and health promotion. Respondents were identified through CADTH's liaison officers, publications, and agencies identified while scoping and reviewing the literature, and from other survey respondents (some of whom forwarded the survey to other colleagues). All respondents gave explicit permission to use the information they provided in this report.

Internet Search

An internet search of various government, health care, academic, research, and community-based organizations was conducted to identify additional Canadian healthy aging resources as well as to capture relevant international evidence-based resources to promote healthy aging.

Synthesis Approach

One author screened the results of the database and grey literature searches for articles that met the inclusion criteria (see Table 1). Systematic reviews, meta-analyses, or network meta-analyses describing interventions to promote healthy aging in community-dwelling older adults were selected as well as literature describing programs or initiatives for healthy aging. The reference lists of relevant papers were also scanned to identify further relevant information. When several relevant reports for a particular outcome were identified (such as falls prevention), the most recent report and/or report using studies with higher methodological rigour were selected.

Programs and initiatives identified from survey responses and the internet search that met the inclusion criteria were also included in the report. Findings are summarized narratively and grouped by objective.

Findings

Objective #1: Identify interventions from the literature that have demonstrated benefit in promoting and maintaining physical, mental, or social well-being in older people who are living in the community.

The literature search identified a total of 689 articles. Of these, 141 were selected for full-text screening. A total of 30 systematic reviews were selected for inclusion in the Environmental Scan. Of these, 23 systematic reviews of interventions showing benefit for healthy aging outcomes in healthy community-dwelling older adults are summarized in the main report. The details of these reports are presented in Appendix 3, Table 3. Most of the identified interventions focused on improving mobility and balance and/or preventing falls. Several other interventions showing benefits in other outcomes (including improving physical and cognitive function, nutrition, social isolation, and quality of life) were also identified. Vaccinations were also found to be an effective intervention for preventing influenza, herpes zoster, and pneumonia in older adults.

Seven additional systematic reviews describing interventions that showed limited or no benefit for healthy aging outcomes are summarized in Appendix 3, Table 4. These included community screening for visual impairment; protein supplementation; computerized cognitive training; exergaming to improve cognition (physical activity in an interactive and cognitively demanding digital, augmented, or virtual game-like environment); various interventions to reduce social isolation (including physical activity, social interactions, and use of information and communications technology); and web-based interventions targeting cardiovascular risk factors.

Vaccinations

Vaccinations have been shown to be effective for preventing morbidity and mortality associated with certain infectious diseases.¹³ While the majority of routine vaccinations are administered in childhood and adolescence, some are also recommended in older adults due to the weakening of the immune system, the presence of medical comorbidities, and an increased risk of serious health complications and death.¹⁴ These include the influenza, herpes zoster, and pneumococcal vaccines.¹³

Influenza Vaccine

Seasonal influenza epidemics are responsible for significant disease burden each year. Severe illness from influenza causes an estimated 12,200 hospitalizations and 3,500 deaths annually in Canada.¹⁵ Older adults are at increased risk of severe outcomes.¹⁵⁻¹⁷ In Canada, the standard-dose trivalent inactivated influenza vaccine is provided by publicly funded immunization programs.¹⁷ There is evidence that the standard-dose vaccination is less effective in adults over the age of 65 compared with younger adults.^{18,19} A new high-dose trivalent formulation (Fluzone High-Dose) has been developed to increase immune response and protection from influenza illness and was approved by Health Canada in September 2015. Findings from two systematic reviews show that in people 65 years of age and older, high-dose trivalent inactivated influenza vaccine improved protection against influenza-like illness compared with the standard-dose influenza vaccine.^{16,20} One systematic review also showed that the high-dose vaccine was more effective for preventing hospital admissions due to influenza illness, pneumonia, and cardiorespiratory events, as well as all-cause hospital admissions.¹⁶ However, the results did not show that the high-dose vaccine was more effective compared to the standard-dose vaccine for preventing post-influenza mortality or all-cause mortality.¹⁶ The National Advisory Committee on Immunization (NACI) recommends that adults over the age of 65 receive the high-dose influenza vaccine, given evidence of better protection compared to the standard-dose formulation.²¹ As of 2020, Ontario is the only jurisdiction that provides the high-dose vaccine to all people aged 65 years and older free of charge as part of the publicly funded influenza vaccine program.²² An estimated 70% of Canadians 65 years of age or older received the influenza vaccine during the 2018–2019 season.¹³ This is below the national goal of 80% vaccination coverage in adults aged 65 years and older²³ and it's not clear what proportion received the high-dose vaccine.

Herpes Zoster Vaccine

Herpes zoster, also known as shingles, is a manifestation of the reactivation of the varicella-zoster virus, which as a primary infection causes varicella (chickenpox).²⁴ Complications from shingles include prolonged and often debilitating neuropathic pain (postherpetic neuralgia) that can significantly compromise quality of life.²⁵ In Canada, approximately one in three people develop herpes zoster in their lifetime.²⁵ The incidence and severity of herpes zoster and its complications increases sharply after the age of 50 years.²⁵ Vaccination reduces the risk of varicella-zoster virus reactivation and the development of herpes zoster.²⁶ Two herpes zoster vaccines are currently available for use in Canada — a live attenuated vaccine (Zostavax II) and an adjuvant recombinant subunit herpes zoster vaccine (recombinant zoster vaccine, Shingrix). Results from a systematic review indicate that using the recombinant zoster vaccine may prevent more cases of herpes zoster in adults aged 50 and older compared with the live attenuated vaccine.²⁷ Based on the available evidence, NACI recommends that the recombinant zoster Falkenhorst vaccine should be offered to adults over the age of 50 who do not have any contraindications.²⁶ As of 2020, Ontario is the only jurisdiction that provides the herpes zoster vaccine free of charge to people aged 65 to 70

years as part of the publicly funded vaccine program.²⁸ Approximately 28% of Canadians 50 years of age or older have received the herpes zoster vaccine.¹³

Pneumococcal Vaccine

Pneumonia is a lung infection that may result in various symptoms including difficulty breathing, coughing, fever, fatigue, chest pain, and confusion.²⁹ The bacterium *Streptococcus pneumoniae*, also referred to as pneumococcus, is a common cause of pneumonia.³⁰ The most severe form of pneumococcal disease is invasive pneumococcal disease (IPD), which occurs when the bacteria infects normally sterile sites, such as the bloodstream (bacteremia) or central nervous system (meningitis).³¹ Adults over the age of 65 are at higher risk for IPD and case fatality in this population can exceed 20%.³¹ Pneumonia can also be the result of an influenza infection.²⁹ In 2018, pneumonia arising from an influenza infection was the seventh leading cause of death in Canada in individuals aged 70 to 79, and the fourth leading cause of death in individuals over the age of 85.³² There are currently two vaccines available in Canada for the prevention of pneumococcal pneumonia – pneumococcal 23-valent polysaccharide vaccine (Pneu-P-23, Pneumovax 23), containing 23 pneumococcal serotypes, and pneumococcal 13-valent conjugate vaccine (Pneu-C-13, Prevnar 13), containing 13 pneumococcal serotypes.³³ Results from a systematic review showed that Pneu-P-23 is effective against IPD and pneumococcal pneumonia in adults over the age of 60.³⁴ Based on the available evidence, and in view of its broader serotype coverage compared to Pneu-C-13, NACI recommends adults of the age of 65 receive one dose of the Pneu-P-23 vaccine.³³ As of 2020, the Pneu-P-23 vaccine is publicly funded in all the provinces and territories for all adults over the age of 65.²⁸ However, it is estimated that 58% of adults over the age of 65 have received the pneumococcal vaccine.¹³ This is below the national goal of 80% vaccination (one dose) coverage of a pneumococcal vaccine in adults 65 years of age and older.²³

Nutrition

Malnutrition, defined as a deficiency or imbalance in nutrient intake, has a relevant prevalence in community-living older adults, resulting in worsening of health conditions, frailty, and disability, and greater likelihood for hospitalization and mortality.³⁵ Factors that contribute to malnutrition in older adults include loss of appetite due to an impaired sense of smell and taste, socioeconomic factors, and functional decline. A large population-based survey conducted in 2008 by Statistics Canada estimated that up to 34% of Canadians aged 65 years or older were at nutritional risk.³⁶

Nutritional Intake

Meal delivery and congregate meal programs have been described as facilitating access to nutritional meals while encouraging individuals to engage in social interaction. To avoid malnutrition and address some of the barriers of obtaining an adequate food supply, home-delivered meals services provide meals in the home or in congregate settings for older adults living in the community who require nutritional support. Results from one systematic review suggest a beneficial effect of home-delivered meals on dietary intake of energy, protein and/or certain micronutrients (including calcium, vitamin A, B-complex vitamins, vitamin D, zinc, and magnesium) in older adults.³⁷ Results for congregate meal services were limited, but these did not appear to improve nutritional intake.

Frailty, Functional Disability, and Cognitive Function

The Mediterranean diet is characterized by a high intake of plant-based foods (including fruits, vegetables, beans, nuts, and whole grains) and fish (a source of polyunsaturated fat); a moderate intake of alcohol, dairy products, and olive oil; and a low intake of meat.³⁸ The recommended foods are rich with monounsaturated fats, fibre, and omega-3 fatty acids. Results from two systematic reviews found that community-dwelling older adults with greater adherence to a Mediterranean diet were less likely to develop frailty.^{39,40} Results from one systematic review also suggests that a greater adherence to a Mediterranean diet decreases the risk of developing functional disability.⁴⁰ The effect of adherence to a Mediterranean diet on cognitive function was assessed in one systematic review.⁴¹ Results showed that adherence to a Mediterranean diet was associated with better cognitive performance and less cognitive decline over time.

Physical Activity

There is consistent evidence that physical activity is positively associated with healthy aging outcomes, regardless of definition and measurement.^{42,43} The key benefits of exercise in older adults include improved strength, flexibility, mobility, and fitness, which can improve daily function, help to maintain independence, and reduce the risk of falls and fall-related injuries.⁴⁴⁻⁴⁷ Group exercise programs have an added benefit of providing social engagement. Based on objectively measured data, only 15% of Canadians aged 65 to 79 years of age achieve the amount of exercise recommended by the *Canadian Physical Activity Guidelines* (at least 150 minutes of weekly moderate to vigorous physical activity in sessions of 10 minutes or more).⁴⁸ Furthermore, adults aged 65 to 79 are sedentary for an estimated average of 10.1 hours per day (excluding sleep time).⁴⁸ Several barriers to achieving the recommended amount of physical activity among older adults, particularly in rural communities, may include adverse weather and long winters, limited indoor recreational facilities, and the requirement to travel to larger centres with the necessary infrastructure and programs.

Falls and Fear of Falling

An estimated 20% to 30% of Canadians older than 65 years fall each year.⁹ Falls account for 85% of injury-related hospitalizations among older adults and 95% of all hip fractures.⁹ Older adults who have fallen commonly experience negative health outcomes such as chronic pain, fear of falling, loss of independence, greater isolation, confusion, reduced mobility, and depression.⁴⁹ Over a third of older adults are admitted to long-term care facilities following a fall-related hospitalization.⁹ In Canada, the number of deaths due to falls increased by 65% from 2003 to 2008.⁹

Exercises that target balance, gait, and muscle strength have been studied to prevent falls in older adults. Results from a Cochrane systematic review found that exercise programs reduce the rate of falls and the number of people experiencing one or more falls.⁴⁹ Exercise programs were effective regardless of whether they were delivered individually or in groups, by health professionals or trained non-health professionals, to younger or older participants (based on a 75 years of age threshold), or to those identified as high- or low-risk for falls.

The effects of exercise on risk for fracture and hospitalization are uncertain, mainly reflecting the considerable under-reporting of these outcomes in the included studies. Different forms of exercise had different impacts on falls. Results showed that exercises that mainly consisted of balance and functional training for an average of 25 weeks were significantly more effective for reducing falls when compared with an inactive control group.⁵⁰ Programs

involving multiple types of exercise (most commonly balance and functional exercises plus resistance exercises) for an average of 26 weeks and tai chi for an average of 20 weeks may also reduce falls in community-dwelling older adults.⁵⁰ The effects of other types of exercise on falls, such as resistance training (alone), dance, or walking were less certain. Flexibility and endurance training have not been evaluated for falls prevention.

Fear of falling has been associated with reductions in physical and social activities, negative impacts on quality of life, and an increased risk of future falls.^{51,52} A Cochrane systematic review investigated the effects of exercise interventions on fear of falling in community-dwelling adults aged 65 years and older.⁵³ Results showed that exercise interventions were associated with a small to moderate reduction in fear of falling in community-living older adults immediately post-intervention. There was a small but not statistically significant effect in the longer term (\geq six months post-intervention). The effect of exercise interventions did not vary by type, frequency, or duration of exercise (five weeks to 130 weeks), or by the falls risk of participants. Subgroup analyses suggested that the effect of exercise interventions may be greater when group exercises rather than individual exercises were used. No significant reduction in fear of falling was found beyond the end of the exercise intervention.

Sarcopenia, Lean Body Mass, Muscle Strength, and Physical Performance

Physical activity represents a key approach to preventing muscle weakness and improving physical function in older adults.^{54,55} Sarcopenia is an age-associated progressive decrease of skeletal muscle mass and strength.⁵⁶ Sarcopenia is known to lead to frailty, cachexia (weight loss and muscle wasting), osteoporosis, metabolic syndrome, and death.⁵⁷ A growing body of research has confirmed the association between physical activity and a lower prevalence of sarcopenia.⁵⁷ Results from one systematic review indicate that physical activity in community-dwelling adults over the age of 60 reduces the odds of developing sarcopenia later in life.⁵⁸ A systematic review and network meta-analysis assessed the comparative effects of resistance training, endurance training, and whole-body vibration exercise on lean body mass, muscle strength, and physical performance in older people over the age of 60.⁵⁹ Results showed that resistance training for a minimum of six weeks was the most effective intervention, achieving substantial increases in muscle strength and moderate improvement in physical performance compared to usual care. Whole-body vibration exercise appeared to have a small beneficial effect on physical performance. None of the interventions (resistance training, endurance training, or whole-body vibration) had any significant effect on lean body mass.

Physical and Cognitive Function

Evidence suggests that physical function and cognitive function are linked, and being physically active may protect against the onset of dementia or slow its progression.⁶⁰⁻⁶² A systematic review and meta-analysis examined the effects of exercise training on physical and cognitive function and the association between changes in both outcomes in older adults over the age of 60.⁶³ Results showed that an exercise program with components of both aerobic training and resistance training was beneficial for both physical function (with the greatest benefits being toward improving functional capacity and body strength) and cognitive function in older adults. At the study level, there was a positive correlation between the size of the exercise-induced effect on physical function and on cognitive function (such that studies with large effects in physical function tended to show large effects on cognitive function).

Quality of Life

A higher quality of life may be associated with a lower risk of cardiovascular disease, chronic disease, and falling in older adults.^{64,65} Moreover, improving quality of life may positively affect sleep quality, which may help reduce psychological disorders such as depression and reduce the risk of cognitive decline.^{66,67} A meta-analysis quantified the overall effect of physical exercise training on quality of life in healthy older adults over the age of 65.⁶⁸ Secondary outcomes included the effects of physical exercise on social, physical, and psychological components of quality of life. The analysis showed a positive, medium-sized effect of physical exercise training on quality of life in healthy older adults. Results also showed a medium-sized effect of physical exercise on the physical and psychological component of quality of life, but no effect on the social component of quality of life.

Musical Programs to Enhance Cognitive Function

Musical practice is one of the activities that is considered to contribute to cognitive reserve by involving multiple sensory and motor systems and requiring a higher-level cognitive process.⁶⁹ One systematic review investigated the potential of musical practice as an enhancer of cognitive function in healthy aging. Results indicated that piano lessons of four to six months' duration lead to improvements in cognitive functions in older adults, especially in high-level functions, such as reasoning.

Interventions to Reduce Social Isolation

Remaining socially engaged has been found to be a key factor in aging well.⁷⁰ Having a network of family and friends allows older adults to participate in social life and achieve a sense of belonging and purpose.^{71,72} Socially isolated individuals lack contact with others, support, and a sense of belonging.⁷³⁻⁷⁵ They have an unmet need for meaningful social interactions, which is often identified as loneliness.^{75,76} Older adults who are socially isolated are more likely to experience a poor quality of life, morbidity, and mortality.⁷⁷ Social isolation is also linked to the undervaluing of older adults in society and the loss of older adults' valuable contributions to the volunteer sector, and to the paid economy.⁷⁸⁻⁸⁰ Statistics Canada estimates that 24% of Canadians 65 and older feel isolated from others and wish they could participate in more social activities.⁷⁰

One systematic review investigated the impact on health and well-being of interventions that foster respect and social inclusion (defined as the opportunity for individuals to cultivate social relationships, have access to resources, and feel part of the community they live in) of community-dwelling adults over the age of 60.⁸¹ Interventions involved mentoring (engaging older people in social activities with others within a group setting), intergenerational programs (including mentoring, school, reading, and reminiscence initiatives and interventions based on service-learning pedagogy), multi-activity programs (including projects to encourage older people to participate in various activities organized in the city, regular gatherings at neighbours' homes and interactions with others, social clubs and exercise programs, regular meetings to discuss health information topics, peer-led exercise, or cultural activities), dancing, music and singing, art and culture, and the use of information and communications technology (including computer training and internet usage). The interventions that were associated with an overall positive impact on health outcomes were music and singing, intergenerational interventions, art and culture, and multi-activity interventions. Benefits

included improvements in depression, well-being, subjective health, quality of life, perceived stress and mental health, and physical health. Due to a paucity of evidence for mentoring, dancing, and the use of information and communications technologies, the effect of these interventions on healthy aging outcomes was not clear.

Cognitive Behavioural Therapy

Cognitive behavioural therapy (CBT) is a psychotherapeutic approach that functions on the assumption that an individual's behaviour and emotions are influenced by their perceptions toward the event.⁸² CBT-based strategies aim to change the underlying beliefs that give rise to the maladaptive behaviour through the use of motivational techniques and goal-setting.⁸³

Fear of Falling and Balance

A CBT-based approach could potentially alter maladaptive behaviours (such as refusing to leave the home) in older adults with a fear of falling and enhance positive behaviours such as physical activity participation, social participation, and self-care. One systematic review evaluated the effects of CBT for reducing fear of falling and enhancing balance in healthy community-dwelling adults over the age of 60.⁸⁴ CBT was delivered in groups or privately, either in person or over the phone. The CBT sessions lasted between four weeks and 20 weeks and included goal-setting and promoting physical activity. Results indicated that CBT may slightly lower the risk of falling and improve balance. For risk of falling, the beneficial effects of the interventions began immediately after therapy ended and lasted for six months to 12 months, while for balance the beneficial effects of the intervention were observed within six months of the end of treatment. Results also indicated that individual CBT may produce stronger effects than CBT done in groups.

e-Health Interventions

e-Health is a term used to describe the use of information and communications technology (including the internet, web-based apps, tablets, and smartphones), health care and health promotion-focused web-driven applications (such as telemedicine and electronic health records), virtual interventions, exergaming (physical activity in an interactive and cognitively demanding digital, augmented, or virtual game-like environment), and personal health monitoring systems (including wearables) to deliver treatment, information, and interventions designed to improve health.⁸⁵ e-Health technologies have the potential to deliver low-cost health interventions on a large scale and could change how many community services are delivered and accessed. Although there is considerable breadth in terms of the types of e-health interventions that have been studied, there is limited high-quality evidence to establish the role of these technologies for improving physical or cognitive performance, or quality of life in older adults.^{86,87} Furthermore, systematic reviews of computerized cognitive training⁸⁸ or exergaming⁸⁹ to improve cognition, information and communications technology interventions for reducing social isolation,^{81,90} and web-based interventions targeting cardiovascular risk factors⁹¹ have not found evidence of consistent benefit in older adults. The section that follows describes e-health interventions that have shown to be beneficial for mobility, balance, and fear of falling in community-dwelling older adults.

Mobility, Balance, and Fear of Falling

One systematic review assessed the clinical effectiveness of computerized cognitive-based interventions for improving simple (normal walking) and complex (walking while talking) gait in adults older than 60 without major cognitive, psychiatric, neurologic, and/or sensory

impairments.⁹² Results showed that computerized cognitive training interventions can improve mobility-related outcomes, especially during complex walking conditions requiring higher-order executive functions. Intervention duration, training frequency, total number of sessions, and total minutes on the intervention were not significant predictors of improvement in complex walking speed. Cognitive-based approaches could provide a low-risk and accessible treatment opportunity serving as an alternative or supplemental strategy for those older adults who do not or cannot engage in physical exercise regimens as a result of physical, motivational, medical, or socioeconomic limitations.

One systematic review assessed the effectiveness of virtual reality games for falls prevention in community-dwelling older adults.⁹³ Several studies investigating virtual reality games compared with no treatment and conventional exercise interventions demonstrated that the virtual reality games had significant and positive effects on balance and mobility. Moreover, studies showed benefits in favour of the virtual reality games for fear of falling, reaction time, and muscle strength of the lower limbs compared with traditional programs, such as balance and resistance exercises.

Multi-Component and Multifactorial Interventions

A broad range of sociodemographic, physical, biological, lifestyle, and psychological factors have shown to be associated with the development of frailty in community-dwelling adults.^{3,94} Hence, an approach integrating different types of interventions that targets two or more risk factors for frailty may be beneficial. Multi-component interventions include different components that are fixed (i.e., the same component interventions are provided to all participants). Multifactorial interventions are focused interventions that target multiple modifiable risk factors identified during a comprehensive risk assessment. As such, the applied interventions are individualized and, within any treatment cohort, not all people receive the same combination of interventions. The manner in which multifactorial interventions are delivered also varies.⁹⁵

Cognitive Function

One meta-analysis evaluated the potential synergistic effects on objectively measured cognitive functions (e.g., memory, attention, executive control) when physical activity interventions are combined with cognitive activity interventions.⁹⁶ Relative to the control group, multi-component interventions combining physical activity (including aerobic and/or strength training components) and cognitive activity (involving cognitive training exercises) showed significantly larger gains in cognition. Studies that compared combined physical activity and cognitive activity interventions to physical activity interventions alone showed small but significantly greater cognitive improvement in favour of combined interventions. No significant difference was found when combined physical activity and cognitive activity interventions were compared to interventions of cognitive activity alone. Furthermore, cognitive effects tended to be more pronounced for studies using simultaneous designs (interventions including physical activity and cognitive activity concurrently such as exergames, dance, tai chi, or martial arts) versus sequential designs (interventions with separate sessions of physical activity before or after separate sessions of cognitive activity).

Falls Prevention

A Cochrane systematic review assessed the effects of multi-component and multifactorial interventions to prevent falls in community-dwelling adults over the age of 60.⁹⁷ Multi-component interventions included exercise in combination with education; home safety;

nutrition; psychological interventions; home safety and nutrition; home safety and vision assessment; and nutrition and psychological interventions. Exercise was the most common pre-specified component of multifactorial interventions, followed by environment and assistive technologies (e.g., home hazard assessment and modifications, referral to occupational therapist), medication review, and psychological interventions (e.g., cognitive behavioural interventions, referral to mental health services). Compared to usual care or attention control (intervention not thought to reduce falls), results showed that both multi-component and multifactorial interventions may reduce the rate of falls. Multi-component interventions may also reduce the risk of sustaining one or more falls and the number of people who experience recurrent falls. There was not enough evidence to determine the effects of either intervention on other fall-related outcomes (such as fractures or hospital admissions). There was no evidence to indicate that either multi-component or multifactorial interventions were superior to exercise alone for preventing falls.

Another systematic review assessed the longer-term effects (greater than 12 months of follow-up) of multifactorial interventions compared with usual care (i.e., no change in usual activities) or usual care plus advice (in either written, audio, or visual format) for preventing falls in older people living in the community.⁹⁵ The results showed that while multifactorial interventions may reduce the rate of falls and slightly reduce the risk of people sustaining one or more falls and recurrent falls, they may make little or no difference to other fall-related outcomes (such as fall-related fractures, falls requiring hospital admission or medical attention, and health-related quality of life). Results also showed that the effect of multifactorial interventions in reducing the rate of falls may be smaller when compared with usual care plus non-tailored falls prevention advice as opposed to usual care only.

A systematic review and network meta-analysis was conducted to determine the most effective interventions for preventing falls in community-dwelling adults aged 60 and over.⁹⁸ The interventions assessed included education, risk assessment, medical care (including vitamin D3 supplements and treatment of vision problems), hazard assessment (including personal or environmental safety recommendations and modifications), a combination of risk assessment and exercise, a combination of hazard assessment and exercise, and multifactorial interventions including three or more interventions. Compared to usual care, multifactorial interventions demonstrated the greatest efficacy for reducing the incidence of falls, followed by interventions combining education and exercise and interventions combining exercise and hazard assessment. Notably, although the analysis ranked multifactorial interventions as the most effective intervention, single interventions such as exercise and risk assessment achieved nearly the same effectiveness. The analysis did not consider other fall-related outcomes such as fractures or hospitalization.

Objective #2: Identify and describe specific programs, interventions, and initiatives that are being used in Canada and internationally to promote healthy aging and prevent frailty.

The findings presented are based on the survey results, the literature search, and an additional internet search. Of 102 surveys sent out, 29 responses were received. Three of these responses were incomplete and could not be used. The jurisdictions and organizations represented by the survey respondents are presented in Appendix 2. Details of the identified Canadian and international programs, interventions, and initiatives are summarized in Appendix 4. Healthy aging resources identified from the literature review, survey results, and

the internet search that were not within the scope of this scan but that may be of interest (including Canadian self-management resources, guidance resources, community and environmental design initiatives, and pet ownership studies) are presented in Appendix 5.

Canadian Best Practices Portal of Evidence-Based Programs

The Canadian Best Practices Portal provides access to evidence-based public health interventions.⁹⁹ The portal provides several useful resources to help stakeholders plan for the implementation of certain programs or interventions including evidence of effectiveness, implementation history, expertise required, implementation supports, and associated resources. A number of evidence-based healthy aging programs that are suitable for implementation within the home or community setting were identified (Appendix 4, Table 5). Most of the programs focus on falls prevention. The remaining programs focus on increasing physical activity, improving nutrition, and decreasing social isolation. Some of the identified programs have been implemented either nationally or provincially in Canada and are subsequently described.

Finding Balance

Finding Balance is a campaign designed to increase awareness of falls prevention strategies in older adults.¹¹⁴ It was developed by the Injury Prevention Centre at the University of Alberta in partnership with seniors' groups, health care organizations, and practitioners across Canada. The program is administered nationally by provincial stewards (various partners such as regional health authorities, public health organizations, and community health groups) tasked with delivering the program in their respective regions.

Stay on Your Feet

Stay on Your Feet is a program that aims to reduce falls and fall-related injuries among older adults living in the community.¹¹⁶ The core strategies of the program include raising awareness, community education, policy development, home hazard reduction, media campaigns, and working with health professionals.¹⁰⁰ The use of local knowledge, leadership, and expertise is emphasized, along with fostering community partnerships. A variety of falls prevention resources are offered including free exercise classes in the community, and there are opportunities for networking. The program has been implemented in Ontario and other jurisdictions are at various stages of the implementation process.

Get Fit For Active Living

Get Fit For Active Living is an eight-week education and exercise program designed to introduce older adults to the benefits of exercise and an active lifestyle.¹²⁵ The program was developed by the Canadian Centre for Activity and Aging and is delivered nationally in Canada.

Food Skills for Families

Food Skills for Families is a hands-on curriculum-based program developed by community-based dietitians and educators.¹³³ The program empowers older adults to eat well by creating easy meals using fresh whole ingredients. The program has been delivered in more than 150 communities throughout British Columbia. Collaborative work with health authorities and other provincial, regional, and community programs continues to extend the reach of the program and enhance its equitable distribution.

Canadian Healthy Aging Programs and Initiatives

A number of programs and initiatives delivered at the national, provincial, regional, and community level were identified for falls prevention, increasing physical activity, deprescribing, improving nutrition, decreasing social isolation, and improving access to services that allow older adults to age in place (e.g., help with yard work, housekeeping, and home repairs)(Appendix 4, Table 6). Various strategies for promoting and implementing healthy aging programs are being used. These strategies include training programs, tool kits, and other resources to raise awareness of the programs available in the community; access to transportation for social events, medical appointments, and fitness classes; access to assessments by health care professionals (including physicians, pharmacists, occupational therapists, and dietitians) in community or home settings; financial assistance for home safety renovations or practical needs (such as housekeeping and home maintenance) to allow older adults to stay in their homes longer; and networking opportunities for health professionals, caregivers, researchers, and policy-makers.

Innovative approaches are being used across Canada to ensure that healthy aging interventions in the community are practical and sustainable, given limited health care resources. Some programs in Canada are using collaborative partnerships between diverse sectors such as government, not-for-profit, and community organizations. Others are focused on engaging older adults in the leadership, outreach, training, and delivery of healthy aging programs and initiatives. The peer-health educator model has been shown to be effective for breaking down communication barriers, reaching isolated groups of older adults, and improving healthy behaviours through positive role modelling.¹⁰¹⁻¹⁰³ Some of these programs are subsequently highlighted.

Better at Home

The Better at Home program helps older adults in British Columbia with simple day-to-day tasks (such as yard work, housekeeping, and minor home repairs) so that they can continue to live independently in their own homes and remain connected to their communities.¹⁰⁴ The Government of British Columbia funds the program, the United Way of the Lower Mainland manages it, and local non-profit organizations provide the services. The program is delivered by volunteers along with dedicated staff and contractors. A seniors-planning-for-seniors approach means older adults contribute to the design, operation, and evaluation of their local program. Through local, regional, and provincial collaboration, the Better at Home program identifies ways to integrate program services with existing support services for older adults throughout the spectrum of care, including medical, non-medical, and social services. The program continues to build linkages with other seniors' programs and services, including with health authorities, ensuring that the program is better integrated into existing networks. An evaluation of the program showed that more than 90% of seniors were satisfied with the frequency, length, affordability, and accessibility of services.¹⁰⁵ The most meaningful impacts of the program reported by older adults were managing the tasks of daily living, and feeling safe, supported, and able to stay in their homes longer. Social connectedness was identified as a significant and positive outcome of all program services. An evaluation of a pilot project in hard-to-serve rural and remote communities found the program has reduced gaps in services to older adults, enabling them to remain living independently in their homes; has had positive impacts on isolation and/or loneliness of older adults, connection with the community, and ability to safely live alone; and provided awareness and access to services that did not exist previously.¹⁰⁶

Choose to Move

Another example of a program that uses collaborative partnerships and a capacity-building approach within communities is the Choose to Move program in British Columbia.^{107,108} In partnership with the British Columbia Ministry of Health, the Active Aging Research Team at the University of British Columbia co-created the Choose to Move health promotion program.¹⁰⁹ Choose to Move is a free, evidence-based, six-month personal planning and support program designed for adults older than 65 who are not regularly active. It is a custom choice-based program that fits all interests, goals, and abilities. An action plan for physical activity is created by working with an activity coach (certified older adult fitness instructors or kinesiologists) who also provide ongoing support through monthly group meetings (to connect with fellow participants to learn about health topics and share successes and challenges), one-on-one consultations, and regular check-ins. Delivery partner organizations were identified based on their capacity to adapt, deliver, and sustain a physical activity program for older adults and to maximize reach to older adults in communities across all regions of the province.¹⁰⁹ The program is delivered in partnership with the British Columbia Recreation and Parks Association and the YMCA. The effectiveness of the program was evaluated using a hybrid effectiveness–implementation study design.¹⁰⁹ Results indicate that the program has beneficial effects on physical activity, mobility, and social connectedness.

Allies in Aging

Allies in Aging is a collective impact initiative that connects older adults across communities in British Columbia through leadership, outreach, training, and advocacy.¹¹⁰ The focus of the initiative is on older adults who are at risk of isolation due to disability, low-income, language, or cultural barriers. Four lead agencies developed neighbourhood-based and regional projects to improve social connections and supports for older adults in the community. Projects nurtured older adult leadership, provided intentional connections and outreach, and strengthened training opportunities with a focus on community-based capacity building. One of these projects, The Seniors Hub Model, empowered older adults to find meaningful ways for reaching out and connecting with vulnerable older adults in their communities.¹¹¹ The goal of the project was to support the independence and active participation of older adults in community life. The main outcomes of this program included the identification and connection of isolated or under-represented older adults to appropriate services, information, and community activities, and the opportunity for volunteer older adults to gain the leadership skills, knowledge, and connections needed to sustain their neighbourhood seniors' hub.

Supporting Healthy Aging by Peer Education and Support

Supporting Healthy Aging by Peer Education and Support, or SHAPES, is a study investigating an innovative partnership between seniors' community organizations and clinical faculty at the University of Alberta.^{112,113} The project was designed to engage and empower older people to deliver sustainable health education and support for their peers living in the community. Health coaches, drawn from community-dwelling older adults, educated and supported their peers in healthy aging behaviours. The 12-week program contained four three-week interactive modules that focused on heart and bone health, nutrition, physical activity, and social engagement. Each module consisted of a one-hour workshop followed by three facilitated weekly discussion sessions. Participants were encouraged to take up healthy aging behaviours, undertake self-management techniques, or seek formal assistance if necessary. The study was completed in October 2019 and results will be shared with seniors' organizations throughout Edmonton.

Culturally Informed Programs

There is a growing population of older Indigenous adults in Canada. From 2006 to 2016, the percentage of Indigenous adults over the age of 65 years increased from 4.8% to 7.3%.¹¹⁴ According to population projections, the proportion of First Nations, Métis, and Inuit populations 65 years of age and older could more than double by 2036.¹¹⁵ Key themes for healthy aging in the Indigenous population include connection with family, community, and the land; engagement in traditional medicine, social gatherings, and community events; preparation of traditional foods; spirituality; and language.^{116,117} There is evidence that maintaining roles as leaders in the community (in traditional ceremonies, teaching, and passing on traditional knowledge) as well receiving support from their families and social networks (including assistance with everyday activities such as grocery shopping, transportation, or home maintenance) are integral to successful aging among older Indigenous people.¹¹⁷ A number of programs and initiatives targeted at older Indigenous adults providing social and cultural supports in rural and urban settings were identified (Appendix 4, Table 7). Some are using collaborative partnerships between diverse sectors such as government, not-for-profit, and Indigenous communities. Many initiatives are addressing social isolation experienced by older Indigenous adults by creating opportunities to engage in culturally relevant social events in settings where they feel safe learning new skills and sharing their stories. Some programs and initiatives are giving Elders the opportunity to teach and pass on traditional knowledge to younger generations. Others are providing non-medical services (such as Meals on Wheels, transportation to medical appointments) so that they can remain in their homes longer. Training programs and tool kits for communities, groups, and individuals interested in developing and maintaining culturally informed programs for healthy aging in Indigenous populations are also available.

Technology-Based Programs

A few initiatives in Canada that are specifically investigating technology-based interventions to promote community-based healthy aging were identified (Appendix 4, Table 8). Two organizations based in Ontario, AGE-WELL (Aging Gracefully across Environments using Technology to Support Wellness, Engagement and Long Life)¹¹⁸ and the Centre for Aging + Brain Health Innovation¹¹⁹ are providing funding for the evaluation of innovative technologies (including a virtual reality bike, apps, online training programs, robotics, and devices) that could potentially support healthy aging in the community.

International Evidence-Based Healthy Aging Programs

A number of international programs with evidence of efficacy for community-dwelling older adults were identified for healthy aging in general, falls prevention, mental health, and medication review (Appendix 4, Table 9). Of the identified programs, one is currently in the process of being tested for implementation by a research team at the University of British Columbia.¹²⁰ The Otago Exercise Program, which consists of strength and balance training delivered by a physiotherapist, has been shown to reduce falls in older adults who are at risk of a fall.¹²¹ The research team recently demonstrated that exercise coaching with the use of a wearable device, such as a Fitbit, was feasible and could help older adults stay active. A key element of the project was to empower older adults to develop realistic exercise goals. The current project is testing two methods of delivering the Otago program, which includes a new coaching approach by a physiotherapist and the use of a Fitbit to provide feedback (versus the traditional program delivery). The team will measure success by the degree to which the program is delivered as intended and the degree to which it is followed by older adults at

12 months, 18 months, and 24 months. The number of falls, risk of falling, and participation in walking activities between the two groups will also be assessed over time. In addition, the team will assess whether the coaching approach is a cost-effective option for delivering the Otago program.

Limitations

This Environmental Scan is not intended to be a comprehensive review on the topic of healthy aging. Due to the extensive body of literature relating to the topic of healthy aging, the literature review was restricted to recent evidence from systematic reviews, meta-analyses, and network meta-analyses. Hence, potentially relevant evidence from other study designs or from articles published prior to 2014 may not have been captured. Although the cut-off age for inclusion of intervention studies was set conservatively at 50 years, studies including all adult populations were excluded and relevant evidence for the subpopulation of older adults may have been missed. Although the literature identified was not subject to critical appraisal, insights offered by the authors of the included reports indicate that most of the findings were based on low- to moderate-quality evidence. Furthermore, due to high heterogeneity in intervention components and delivery and inconsistencies in the measurement of outcomes across the studies, the results should be interpreted with caution. This report focuses on health or health technology interventions or programs delivered in the community to healthy older adults. Hence, some interventions (such as clinical interventions in health care settings, chronic disease management, age-friendly communities, and social assistance) were considered beyond the scope of this report. In addition, this report did not include studies evaluating the economic value of interventions for healthy aging. Thus, conclusions or recommendations about the cost-effectiveness of an intervention are outside the scope of this report. The survey was available in English only and there was lack of representation from Quebec and Canada's three territories. Furthermore, the survey response rate (28%) was low and many of the survey responses included information for frail older adults. This information was not within the scope of this report and was therefore excluded. Hence, an additional internet search was conducted to identify additional healthy aging interventions, programs, and initiatives. Findings are intended to represent a snapshot of current Canadian and international interventions, programs, and initiatives for healthy aging. The concept of healthy aging may be viewed differently within different cultural and ethnic communities. Although culturally relevant resources were included in this report, the exploration of healthy aging resources specific to different groups was beyond the scope of this scan.

Conclusions and Implications for Decision- or Policy-Making

This Environmental Scan was informed by a review of the literature, responses received from a survey, and an internet search. There is evidence from the literature that numerous interventions have a positive impact on healthy aging outcomes in community-dwelling older adults. These include the influenza, herpes zoster, and pneumococcal vaccinations; home-delivered meal services; the Mediterranean diet; physical activity; musical programs; cognitive behavioural therapy; virtual reality games; some interventions targeting a reduction in social isolation (including music and singing, intergenerational interventions, art and culture, and multi-activity interventions); and multi-component or multifactorial interventions. Falls prevention is an outcome that has been extensively studied in healthy aging research. Exercise that mainly involves balance and functional training has been shown to reduce falls

in community-dwelling older adults. However, effects on other falls-related outcomes (such as risk for fracture and hospitalization) are uncertain. While multi-component and multifactorial interventions with exercise as a main component have also been shown to reduce falls in older community-dwelling adults, there is a lack of evidence indicating that either intervention is superior to exercise alone for preventing falls.

Healthy aging is being promoted across Canada through programs and initiatives at the national, provincial, regional, and community level. Areas of focus include falls prevention, increasing physical activity, deprescribing, improving nutrition, decreasing social isolation, and improving access to services that allow older adults to age in place (e.g., help with yard work, housekeeping, and home repairs). Innovative approaches are being used across Canada to ensure that healthy aging interventions in the community are practical and sustainable, given limited health care resources. Some are using collaborative partnerships between diverse sectors such as government, not-for-profit, and community organizations. Others are focused on engaging older adults in the leadership, outreach, training, and delivery of healthy aging programs and initiatives. Those that have been evaluated have yielded positive results for healthy aging outcomes. Several programs and initiatives targeted at older Indigenous adults provide social and cultural supports in rural and urban settings. While there currently appears to be limited evidence to support the use of technology-based interventions for healthy aging in the community, research investigating various innovative health technologies is currently underway in Canada. International evidence-based healthy aging programs are available, some of which have been implemented in Canada.

In addition to this Environmental Scan, CADTH has prepared several reports related to the topic of healthy aging. All of these reports are available free of charge on the CADTH website:

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- Congregate meal programs for older adults living in the community: a review of clinical effectiveness. (CADTH rapid response report: summary with critical appraisal). Ottawa (ON): CADTH; 2019: <https://www.cadth.ca/sites/default/files/pdf/htis/2019/RC1055%20Congregate%20Meal%20Programs%20for%20Seniors%20Final.pdf>. Accessed 2020 Jan 20.
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Appendix 1: Healthy Aging Survey

Background

Canada has an aging population, which has significant implications for the provision of health and social care services. Interventions that help people live healthy and independent lives for as long as possible can improve the well-being and quality of life of older people and could also reduce demands on health and social care services.

CADTH is preparing an Environmental Scan to identify effective interventions to promote healthy aging and prevent frailty in community-dwelling older adults. Examples of such interventions could include:

- physical activity, exercise, and falls prevention promotion
- healthy diet and nutritional support, and programs that address food insecurity
- house modifications
- interventions to encourage community engagement and prevent social isolation
- programs to improve uptake of vaccinations
- deprescribing initiatives to reduce use of inappropriate medications.

We are also interested in the outcomes from such interventions. For example, these may include:

- reduced hospital admissions
- reduced rates of falls
- increased social engagement or reduced isolation
- improved quality of life
- reduced levels of depression
- increased levels of exercise or improved levels of fitness
- delayed cognitive decline
- reduced or delayed admission to assisted living or long-term care.

Objectives

The key objectives of this Environmental Scan are to:

- Identify effective interventions that have demonstrated benefit in promoting and maintaining good health in people 60 years and older who are living in the community.
- Identify and describe specific programs, agencies, and interventions that are being used across Canada to promote health aging and prevent frailty.

Definitions

- We have defined **older adults** as **individuals age 60 and older**.
- The focus of this survey is on **older adults** who **are living independently in the community (Interventions for assisting frail elderly or older adults who reside in long-term care or nursing home facilities are not the focus of this project)**.

Healthy aging has been defined by the [World Health Organization](#) as “... the process of developing and maintaining the functional ability that enables wellbeing in older age. Functional ability is about having the capabilities that enable all people to be and do what they have reason to value.”

Interventions includes pilot projects, programs or services from health or social care, or from other fields, such as community planning, transportation, and education.

Effective interventions implies evidence-based interventions, for example, based on published literature or program evaluations.

Your feedback from this questionnaire will help us to understand what interventions for promoting healthy aging in older adults are being used across Canada and elsewhere.

There are eight questions in this survey. Please respond only to the questions that are relevant to your experience. If you have any questions about this survey please contact Leigh-Ann Topfer, Program Development Officer, at leigh-annt@cadth.ca.

CONSENT FORM

Thank you for your interest in contributing to a CADTH report. Your input is needed and highly valuable, as it will inform decision-making on the management of health technologies in Canada. The purpose of this survey is to gather information that will be used to prepare a CADTH Environmental Scan report, which will be published on the CADTH website.

Your participation in this survey is voluntary. You may choose not to participate, or you may exit the survey at any time without penalty. It should take approximately 15 minutes to complete.

Your identifiable private information will be kept confidential. This consent form does not give CADTH permission to disclose your name. If any direct quotes from the survey results are required, respondents will be contacted separately for a signed personal communication form before publishing.

CADTH will summarize your responses in the published report and your organization may be identified as a source. However, you and (if applicable) the organization you represent are not responsible for the analyses, conclusions, opinions, and statements expressed by CADTH.

For detailed information on the purpose of this Environmental Scan entitled **Healthy Aging and Prevention of Frailty: An Environmental Scan**, please see the invitation email from Leigh-Ann Topfer (leigh-annt@cadth.ca).

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the "Agree" button below indicates that:

- you have read the aforementioned information
- you voluntarily agree to participate
- you authorize CADTH to use the information provided by you for the purpose as stated in this form.

If you do not wish to participate in the survey, please decline participation by clicking on the "Disagree" button.

Agree Disagree

Name:

Title:

Organization:

Email:

Phone (optional):

Demographics and Clinical Setting

1. In which province or territory do you work?

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
- Northwest Territories
- Nova Scotia
- Nunavut
- Ontario
- Prince Edward Island
- Quebec
- Saskatchewan
- Yukon
- Other (please specify) (free text)

2. What is your profession? (multiple choice and other)

- Nurse or Nurse Practitioner
- Physician – General practitioner or family medicine
- Physician – Geriatrician
- Physician – Specialist (please specify):
- Occupational therapist
- Social worker
- Dietician
- Pharmacist
- Academic
- Government
- Other:

3. What interventions to promote healthy aging or prevent frailty are you or your organization providing? Please provide the name of the program, a brief description, and a link to the program website for more information (if available).

Name(s) and Description(s):

Link to Program Website (if applicable):

4. If your organization is not currently providing interventions for healthy aging or prevention of frailty, did you offer any in the past that were shown to be effective?

Yes (if yes, please describe in question 5 below)

No, my organization has not offered any such interventions in the past.

5. Please provide the name(s) of any interventions that have been formally evaluated by your organization. Please note the name of the intervention and a brief description of the outcomes (e.g., positive or negative), with a website link or citation for further information, if available.

Name(s) and Description(s) of Outcomes:

Link to Program Website (if applicable):

6. Please describe any ongoing research on new initiatives to promote healthy aging that you or your organization are involved in.

7. Are you aware of any individuals or organizations relevant to healthy aging that should be invited to participate in this survey? Provide names and contact information, if readily available.

8. This Environmental Scan will also include a review of current literature on this topic. If there are any key studies or reports on healthy aging that you think we should be aware of, please reference them here.

Thank you for contributing to this report. We will let you know when the draft report with the survey results and summary of the literature are posted for stakeholder feedback on the CADTH website (in early 2020).

Appendix 2: Information on Survey Respondents

Table 2: Organizations Represented by Survey Respondents

Jurisdiction (number of respondents)	Organization represented by survey respondents (number of respondents)
Pan-Canadian (1)	Canadian Foundation for Healthcare Improvement (1)
British Columbia (6)	Island Health (1) University of British Columbia (1) Simon Fraser University Gerontology Department (1) Fraser Health Authority (2) Promotion of Wellness in Northern BC (1)
Alberta (1)	University of Alberta (1)
Saskatchewan (1)	Saskatchewan Health Authority (1)
Manitoba (2)	University of Manitoba (1) Prairie Mountain Health (1)
Ontario (4)	Baycrest Health Sciences (1) Parachute Canada (1) Schlegel-UW Research Institute for Aging (1) Canadian Centre for Activity and Aging – Western University (1)
Nova Scotia (1)	Nova Scotia Health Authority (1)
New Brunswick (3)	Department of Social Development, Government of New Brunswick (1) AGE-WELL National Innovation Hub in Advancing Policies and Practices in Technology and Aging (1) Horizon Health Network (1)
Prince Edward Island (5)	Department of Health and Wellness – Sports, Recreation and Physical Activity division, Government of Prince Edward Island (1) Health PEI (3) Department of Health and Wellness – Chief Public Health Office, Government of Prince Edward Island (1)
Newfoundland and Labrador (4)	Western Health (2) Department of Children, Seniors and Social Development, Government of Newfoundland and Labrador (1) ActiveLife Physiotherapy and Wellness (1)
Atlantic provinces (1)	Atlantic Collaborative on Injury Prevention (1)

Appendix 3: Study Details of Systematic Reviews

Table 3: Systematic Reviews of Interventions Showing Benefit

First author, publication year, country	Study details	Authors' conclusion
Vaccinations		
Lee, 2018 ¹⁶ Canada	<p>Included study design(s) 5 RCTs, 4 retrospective cohort</p> <p>Population Adults 65 years of age and older (N = 8,984,511)</p> <p>Intervention(s) High-dose influenza vaccine (HD-IIV3, Fluzone High-Dose)</p> <p>Comparator(s) Standard-dose influenza vaccine (SD-IIV3)</p> <p>Main study outcomes HD-IIV3 demonstrated better effectiveness against influenza-like illness (rVE = 19.5%; 95% CI, 8.6 to 29.0) and was more effective at preventing hospitalization from all causes (rVE = 9.1%; 95% CI, 2.4 to 15.3), hospitalization related to influenza (rVE = 17.8%; 95% CI, 8.1 to 26.5), hospitalization related to pneumonia (rVE = 24.3%; 95% CI, 13.9 to 33.4), and hospitalization due to cardiorespiratory events (rVE = 18.2%; 95% CI, 6.8 to 28.1).</p> <p>HD-IIV3 was not significantly better compared with SD-IIV3 for post-influenza mortality (rVE = 22.2%; 95% CI, -18.2 to 48.8) or all-cause mortality (rVE = 2.5%; 95% CI, -5.2 to 9.5).</p>	<p><i>"Available evidence suggests that HD-IIV3 is more effective than SD-IIV3 at reducing the clinical outcomes typically associated with influenza infection in adults 65 years of age and older. The findings of this study show that HD-IIV3 is effective in preventing influenza-like illness and complications in both controlled and real-world conditions."</i></p> <p>Page 441</p>
Wilkinson, 2017 ²⁰ Canada	<p>Included study design(s) 2 RCTs</p> <p>Population Adults over 65 years of age (N = 41,141)</p> <p>Intervention(s) High-dose influenza vaccine (Fluzone)</p> <p>Comparator(s) Standard-dose influenza vaccine</p> <p>Main study outcomes Patients receiving the high-dose influenza vaccine had significantly less risk of developing laboratory-confirmed influenza infection (relative risk = 0.76; 95% CI, 0.65 to 0.90).</p>	<p><i>"There is limited evidence that the high-dose trivalent, inactivated influenza vaccine in ambulatory, medically stable patients over the age of 65 is associated with decreased rates of laboratory-confirmed influenza infection compared with the standard dose vaccine"</i></p> <p>Page 2780</p>

First author, publication year, country	Study details	Authors' conclusion
<p>Tricco, 2018²⁷ Canada</p>	<p>Included study design(s) 22 RCTs (plus 18 companion reports or potentially overlapping cohort studies)</p> <p>Population Adult over the age of 50 (N = 2,044,504)</p> <p>Intervention(s) Live attenuated herpes zoster vaccine</p> <p>Comparator(s) Adjuvant recombinant subunit herpes zoster vaccine, placebo, or no vaccine</p> <p>Main study outcomes Network meta-analysis of 5 RCTs found no statistically significant differences between the live attenuated vaccine and placebo for incidence of laboratory-confirmed herpes zoster. The adjuvant recombinant subunit vaccine, however, was statistically superior to both the live attenuated vaccine (VE = 85%; 95% CI 31% to 98%) and placebo (VE = 94% 95% CI 79% to 98%).</p>	<p><i>"The results suggest that the adjuvant recombinant subunit vaccine is superior to the live attenuated vaccine for the prevention of herpes zoster infection, as measured by laboratory or doctor confirmed cases and suspected cases."</i></p> <p>Page 9</p>
<p>Falkenhorst, 2017³⁴ Germany</p>	<p>Included study design(s) 4 RCTs, 5 cohort, 3 case-control, 5 case-case</p> <p>Population Adults over 60 years of age living in industrialized countries (N = NR)</p> <p>Intervention(s) Vaccination with pneumococcal vaccine (PPV23)</p> <p>Comparator(s) No vaccination or placebo</p> <p>Main study outcomes Pooled VE against IPD (by any serotype) was 73% (95% CI, 10% to 92%) in 4 clinical trials, 45% (95% CI, 15% to 65%) in 3 cohort studies, and 59% (95% CI, 35% to 74%) in 3 case-control studies. After excluding studies with high risk of bias, pooled VE against pneumococcal pneumonia (by any serotype) was 64% (95% CI, 35% to 80%) in 2 clinical trials and 48% (95% CI, 25% to 63%) in 2 cohort studies.</p>	<p><i>"Our meta-analysis revealed significant VE of PPV23 against both IPD and pneumococcal pneumonia by any serotype in the elderly, comparable to the efficacy of PCV13 against vaccine-serotype disease in a recent clinical trial in elderly people. Due to its broader serotype coverage and the decrease of PCV13 serotypes among adults resulting from routine infant immunization with PCV13, PPV23 continues to play an important role for protecting adults against IPD and pneumococcal pneumonia."</i></p> <p>Page 2</p>

First author, publication year, country	Study details	Authors' conclusion
Nutrition		
Walton, 2019 ³⁷ Australia	<p>Included study design(s) 8 cross-sectional, 4 pre-post quasi-experimental, 1 cohort</p> <p>Population Older adults over the age of 50 living at home (N = 4,860)</p> <p>Intervention(s) Home-delivered meal services (10 studies) Home-delivered or congregate meal services (2 studies) Congregate meal services (1 study)</p> <p>Comparator(s) No meal service</p> <p>Main study outcomes Home-delivered meal services increase the dietary intake of energy and protein, as well as micronutrients such as calcium, vitamin A, B-complex vitamins, vitamin D, zinc, and magnesium. Results for congregate meal services were limited and did not appear to improve nutritional intake.</p>	<p><i>"Home-delivered meal services are able to promote beneficial results in nutritional intake in community living older adults."</i> Page 9</p>
Kojima, 2018 ³⁹ UK	<p>Included study design(s) 4 prospective cohort</p> <p>Population Community-dwelling older people with a mean age of 60 or older (N = 5,789)</p> <p>Intervention(s) High (MDS = 6 to 9) or moderate (MDS = 4 to 5) adherence to Mediterranean diet</p> <p>Comparator(s) Low adherence to Mediterranean diet (MDS = 0 to 3)</p> <p>Main study outcomes Greater adherence to a Mediterranean diet as associated with significantly lower frailty risk ([MDS = 6 to 9, OR = 0.44; 95% CI, 0.31 to 0.64] and [MDS = 4 to 5, OR = 0.62; 95% CI, 0.47 to 0.82]).</p>	<p><i>"This systematic review and meta-analysis shows the first pooled evidence that greater adherence to a Mediterranean diet is associated with significantly lower risk of incident frailty in community-dwelling older people."</i> Page 787</p>

First author, publication year, country	Study details	Authors' conclusion
Silva, 2018 ⁴⁰ Brazil	<p>Included study design(s) 8 prospective cohort, 4 cross-sectional</p> <p>Population Community-dwelling individuals over the age of 60 (N = 20,518)</p> <p>Intervention(s) High adherence to Mediterranean diet</p> <p>Comparator(s) Low adherence to Mediterranean diet</p> <p>Main study outcomes A higher adherence to a Mediterranean diet was found to be inversely associated with frailty (OR = 0.42; 95% CI, 0.28 to 0.65) and functional disability (OR = 0.75; 95% CI, 0.61 to 0.93).</p>	<p><i>"The main results showed that older people with higher adherence to a Mediterranean diet were less likely to develop frailty and functional disability."</i> Page 661</p>
Masana, 2017 ⁴¹ Spain	<p>Included study design(s) 1 RCT, 7 observational studies</p> <p>Population Cognitively healthy over 65 years of age</p> <p>Intervention(s) Adherence to Mediterranean diet</p> <p>Comparator(s) Low adherence to Mediterranean diet</p> <p>Main study outcomes Cognitive function (descriptive results) Adherence to a Mediterranean diet was associated with better cognitive performance and slower cognitive decline in 75% of studies, while 25% found no association. There was some evidence that certain food groups that are highly consumed in the Mediterranean diet (such as fish, nuts, and vegetables) have a protective effect on cognitive decline across included studies.</p>	<p><i>"There was a general consensus across studies that adherence to the MedDiet is related to better cognitive status and less cognitive change over time; consequently MedDiet may play a protective role against cognitive decline."</i> Page 48</p>

First author, publication year, country	Study details	Authors' conclusion
<p>Sherrington, 2019^{49,50} Australia</p>	<p>Included study design(s) 108 RCTs</p> <p>Population People aged over 60 years living in the community (N = 23,407)</p> <p>Intervention(s) Balance and functional exercises (48 trials) Resistance exercises (7 trials) Tai chi (10 trials) Dance (1 trial) Walking (3 trials) Multiple exercise types (21 trials)</p> <p>Comparator(s) Interventions not thought to reduce falls such as general health education, social visits, very gentle exercise or “sham” exercise</p> <p>Main study outcomes Exercise reduces the rate of falls by 23% (rate ratio = 0.77; 95% CI, 0.71 to 0.83 – high-certainty evidence) and the number of people experiencing 1 or more falls was reduced by 15% (RR: 0.85; 95% CI, 0.81 to 0.89 – high-certainty evidence). Balance and functional exercises reduce the rate of falls by 24% (rate ratio = 0.76; 95% CI, 0.70 to 0.81 – high-certainty evidence) and the number of people experiencing 1 or more falls by 13% (RR = 0.87; 95% CI, 0.82 to 0.91 – high-certainty evidence). Characteristics: Average duration of 25 weeks (IQR = 16 to 52), 63% individually tailored, 39% group based Multiple types of exercise (most commonly balance and functional exercises plus resistance exercises) probably reduce the rate of falls by 34% (Rate Ratio= 0.66; 95% CI, 0.50 to 0.88 – moderate-certainty evidence) and the number of people experiencing 1 or more falls by 22% (RR = 0.78; 95% CI, 0.64 to 0.96 – moderate-certainty evidence). Characteristics: Average duration of 26 weeks (IQR = 12 to 52), 75% individually tailored, 54% group based Tai chi may reduce the rate of falls by 19% (Rate Ratio = 0.81, 95% CI, 0.67 to 0.99 – low-certainty evidence) as well as reduce the number of people who experience falls by 20% (RR = 0.80; 95% CI, 0.70 to 0.91 – high-certainty evidence). Characteristics: Average duration of 20 weeks (IQR = 15 to 43), 7% individually tailored, 71% group based</p>	<p><i>“Exercise programmes reduce the rate of falls and the number of people experiencing falls in older people living in the community (high-certainty evidence). The effects of such exercise programmes are uncertain for other non-falls outcomes.”</i> Page 2</p> <p><i>“Exercise programmes that reduce falls primarily involve balance and functional exercises, while programmes that probably reduce falls include multiple exercise categories (typically balance and functional exercises plus resistance exercises). Tai Chi may also prevent falls but we are uncertain of the effect of resistance exercise (without balance and functional exercises), dance, or walking on the rate of falls.”</i> Page 2</p>

First author, publication year, country	Study details	Authors' conclusion
Kumar, 2016 ⁵³ UK	<p>Included study design(s) 29 RCTs, 1 quasi-randomized trial</p> <p>Population Community-living adults over the age of 65 (N = 2,878)</p> <p>Intervention(s) Tai chi and yoga (9 trials) Balance training (19 trials) Strength and resistance training (8 trials)</p> <p>Comparator(s) No intervention or non-exercise interventions such as education (falls prevention or nutrition), social visits, home safety assessment, discussion group, crafts and/or games</p> <p>Main study outcomes Exercise interventions reduced the fear of falling immediately post-intervention (SMD = 0.37; 95% CI, 0.18 to 0.56 – low-quality evidence). There was a small but not statistically significant effect in the longer term (< 6 months) (SMD = 0.17; 95% CI, –0.05 to 0.38) and ≥ 6 months post-intervention (SMD = 0.20; 95% CI, –0.01 to 0.41).</p>	<p><i>"Exercise interventions are associated with a small to moderate reduction in fear of falling in community-living older adults immediately post-intervention."</i> Page 349</p>
Steffl, 2017 ⁵⁸ Czech Republic	<p>Included study design(s) 5 cross-sectional, 2 cohort</p> <p>Population Adults over the age of 60 living in the community (N = 4,605)</p> <p>Intervention(s) Regular exercise (type not specified)</p> <p>Comparator(s) Inactive lifestyle</p> <p>Main study outcomes Physical activity reduces the odds of developing sarcopenia later in life (OR = 0.45; 95% CI, 0.37 to 0.55).</p>	<p><i>"Data from our systematic review and meta-analysis, similar to that of previous authors, also show that PA protects against sarcopenia."</i> Page 840</p>

First author, publication year, country	Study details	Authors' conclusion
Lai, 2018 ⁵⁹ Taiwan	<p>Included study design(s) 30 RCTs</p> <p>Population Adults over the age of 60 (N = 1,405)</p> <p>Intervention(s) Resistance training Endurance training Whole-body vibration</p> <p>Comparator(s) Usual care</p> <p>Main study outcomes Resistance training (minimum 6 weeks' duration) achieved greater muscle strength (leg extension strength) improvement than did usual care (12.8 kg; 95% CI, 8.5 kg to 17.0 kg). Resistance training and whole-body vibration were associated with greater physical performance improvement compared with usual care ([2.6 times greater; 95% CI, 1.3 to 3.9] and [2.1 times greater; 95% CI, 0.5 to 3.7]), respectively.</p>	<p><i>"Using a network meta-analysis, we suggest that resistance training should be the first exercise recommended to older populations, for improving muscle strength and physical performance."</i></p> <p>Page 372</p>
Falck, 2019 ⁶³ Canada	<p>Included study design(s) 48 RCTs</p> <p>Population Healthy adults over the age of 60 (N = 6,281)</p> <p>Intervention(s) Aerobic training (19 trials) Resistance training (9 trials) Multimodal training (incorporating both aerobic and resistance training, or aerobic and/or resistance training and other forms of exercise training such as balance or agility training) (24 studies)</p> <p>Comparator(s) Usual care or other interventions not involving an exercise component (including stretching and health education)</p> <p>Main study outcomes Exercise training has a significant benefit for both physical function (Hedges' g = 0.39; P < 0.001) and cognitive function (Hedges' g = 0.24; P < 0.001). At the study level, there was a positive correlation between the size of the exercise-induced effect on physical function and on cognitive function (b = 0.41, SE = 0.14; P = 0.002).</p>	<p><i>"The results of this meta-analysis support the efficacy of exercise training in promoting both physical and cognitive function in late life. In addition, we observed a significant association between exercise-induced improvements in physical function and cognitive function, such that studies with large effects on physical function tended to show large effects on cognitive function."</i></p> <p>Page 124</p>

First author, publication year, country	Study details	Authors' conclusion
<p>Raafs, 2019⁶⁸ The Netherlands</p>	<p>Included study design(s) 16 RCTs</p> <p>Population Healthy adults over the age of 65 (N = 1,117)</p> <p>Intervention(s) Resistance training (4 trials) Aerobic training (5 studies) Walking/stepping exercises (1 trial) Yoga (1 trial) Vibration training (1 trial) Combination of different training components (4 trials)</p> <p>Comparator(s) No training or other interventions that did not involve a physical exercise component (including health education and a ceramic sculpture class)</p> <p>Main study outcomes The primary analysis showed a medium effect of physical exercise training on quality of life (SMD = 0.38; 95% CI, 0.18 to 0.59). The secondary analyses showed a positive medium effect of physical exercise training on the physical component of quality of life (SMD = 0.39; 95% CI, 0.17 to 0.60) and a positive medium effect of physical exercise training on the psychological component of quality of life (SMD = 0.348; 95% CI, 0.125 to 0.570). No significant effect of physical exercise training on the social component of quality of life was observed (SMD = 0.16; 95% CI, -0.07 to 0.38).</p>	<p><i>"This meta-analysis is the first to clearly show that physical exercise training improves the QoL in healthy older adults."</i> Page 7</p>
Musical programs		
<p>Román-Caballero, 2018¹²² Spain</p>	<p>Included study design(s) 4 experimental studies</p> <p>Population Healthy adults over the age of 60 (with the absence of neurological disorders and cognitive impairment) (N = 126)</p> <p>Intervention(s) Piano lessons (4 to 6 months' duration)</p> <p>Comparator(s) No lessons, musical listening, leisure activities</p> <p>Main study outcomes There were positive mean effect sizes in most cognitive functions (except verbal working memory), although only reasoning (SMD = 0.436; 95% CI, 0.003 to 0.869) and visuoconstruction – the ability to organize and manually manipulate spatial information to make a design – (SMD = 0.519; 95% CI, 0.015 to 1.024) reached statistical significance.</p>	<p><i>"This suggests that musical training in older adults can lead to improvements in cognitive functions, especially in high-level functions such as reasoning, and probably in flexibility."</i> Page 13</p>

First author, publication year, country	Study details	Authors' conclusion
Interventions to reduce social isolation		
Ronzi, 2018 ⁸¹ UK	<p>Included study design(s) 23 quantitative, 6 qualitative, 11 mixed methods</p> <p>Population Community-dwelling adults over the age of 60 (N = NR)</p> <p>Intervention(s) Mentoring Intergenerational and multi-activity programs Dancing Music and singing Art and culture Information and communications technology</p> <p>Comparator(s) Non-exposure to the intervention under investigation, usual practice</p> <p>Main study outcomes Music and singing, intergenerational interventions, art and culture, and multi-activity interventions were associated with an overall positive impact on health outcomes. This included depression (intergenerational interventions, singing and music, multi-activity interventions), well-being (singing and music, art and culture, multi-activity interventions), subjective health (intergenerational interventions, art and culture), quality of life (intergenerational interventions, singing and music), perceived stress and mental health (singing and music, multi-activity interventions), and physical health (singing and music, art and culture).</p>	<p><i>"This review suggests that music and singing, intergenerational initiatives, art and culture and multi-activity interventions may positively impact on wellbeing, subjective health, quality of life and physical and mental health. From the qualitative studies, there was evidence of plausible mediating factors including strengthened social relationships, improved self-confidence and self-esteem, feeling valued, reduction of social isolation and feeling more physically active."</i></p> <p>Page 18</p>
CBT		
Liu, 2018 ⁸⁴ China	<p>Included study design(s) 6 RCTs</p> <p>Population Community-dwelling adults over the age of 60 without any specific diseases or conditions (N = 1,626)</p> <p>Intervention(s) Core components of CBT interventions included cognitive restructuring, personal goal-setting, and promotion of physical activities (including tai chi) Group-based CBT (4 trials) Individual-based CBT (2 trials)</p> <p>Comparator(s) Inactive control, tai chi, usual care</p>	<p><i>"Our results suggest that CBT interventions have significant immediate and retention effects up to 12 months on reducing fear of falling, and 6 months post-intervention effect on enhancing balance among older people."</i></p> <p>Page 526</p>

First author, publication year, country	Study details	Authors' conclusion
	<p>Main study outcomes</p> <p>The analysis revealed a small ES on fear of falling (Hedges' $g = 0.33$; 95% CI, 0.21 to 0.46) in favour of CBT compared with controls. For the short-term retention effect on fear of falling (< 6 months), there was a small ES (Hedges' $g = 0.25$; 95% CI, 0.09 to 0.41) in favour of CBT. For the long-term (≥ 6 months) retention effect on fear of falling, the analysis showed a small ES (Hedges' $g = 0.37$; 95% CI, 0.21 to 0.53) in favour of CBT. There was no effect of CBT on balance immediately following the trial, but a small ES (Hedges' $g = 0.18$; 95% CI, 0.02 to 0.33) at the short-term (< 6 months) follow-up. Subgroup analysis indicated that individual CBT sessions produced stronger effects than group-based CBT sessions.</p>	
e-Health interventions		
<p>Marusic, 2018⁹² Slovenia</p>	<p>Included study design(s) 10 RCTs</p> <p>Population Adults over the age of 60 without major cognitive, psychiatric, neurologic, and/or sensory impairments (N = 351)</p> <p>Intervention(s) Computerized cognitive training interventions</p> <p>Comparator(s) No intervention or a non-stimulating intervention (watching documentaries)</p> <p>Main study outcomes Cognitive training interventions revealed a small beneficial effect of intervention on complex walking speed (ES = 0.47; 95% CI, 0.13 to 0.81), but not simple gait (ES = 0.35; 95% CI, -0.01 to 0.71).</p>	<p><i>"In conclusion, the present article provides evidence that cognitive training interventions can improve mobility-related outcomes, especially those that require higher-order cognitive abilities (such as walking while talking)."</i> Page 8</p>
<p>Neri, 2017⁹³ Brazil</p>	<p>Included study design(s) 28 RCTs</p> <p>Population Community-dwelling healthy older adults (N = 1,121)</p> <p>Intervention(s) Virtual reality games</p> <p>Comparator(s) Conventional therapy or no intervention</p>	

First author, publication year, country	Study details	Authors' conclusion
	<p>Main study outcomes Virtual reality games have a beneficial effect on balance and fear of falling compared with no intervention. Virtual reality games were also superior to conventional interventions for balance improvements and fear of falling. The meta-analysis demonstrated that virtual reality games significantly improved mobility after 3 weeks to 6 weeks of intervention (MD = -1.20; 95% CI, -1.62 to -0.77) and 8 weeks to 12 weeks of intervention (MD = -0.87; 95% CI, -1.44 to -0.29), as well as balance (MD = 2.99; 95% CI, 1.80 to 4.18) when compared with no intervention.</p>	<p><i>"Several studies investigating virtual reality games vs. no treatment and conventional exercise interventions demonstrated that the virtual reality games had significant and positive effects on balance and mobility. Moreover, studies showed benefits in favor of the virtual reality games for fear of falling, reaction time and muscle strength of the lower limbs compared with traditional programs, such as balance and resistance exercises."</i> Page 1298</p>
<p>Multi-component and multifactorial interventions</p>		
<p>Gheysen, 2018⁹⁶ Belgium</p>	<p>Included study design(s) 32 RCTs, 9 non-RCTs</p> <p>Population Adults over the age of 65 living independently in the community (N = NR) without cognitive impairment (30 studies) or with mild cognitive impairment (11 studies)</p> <p>Multi-component intervention PA and CA interventions</p> <p>Comparator(s) PA-only interventions (20 studies) CA-only interventions (10 studies) Control interventions (including no intervention, usual care, or classes not comprising any aerobic or strength training or cognitive training) (29 studies)</p> <p>Main study outcomes Relative to the control group, combined PA and CA showed significantly larger gains in cognition (Hedges' g = 0.316; 95% CI, 0.188 to 0.443). Studies that compared combined PA and CA with PA only showed small but significantly greater cognitive improvement (Hedges' g = 0.160; 95% CI, 0.041 to 0.279). No difference was found between combined PA and CA and CA-only interventions.</p>	<p><i>"Evidence from this meta-analysis suggests that PA programs for older adults can yield superior cognitive benefits when cognitive tasks are integrated into the programs...Also, the promotion of activities that intrinsically combine PA and CA (e.g. dance, tai-chi) should receive more attention."</i> Page 11</p>

First author, publication year, country	Study details	Authors' conclusion
<p>Hopewell, 2018⁹⁷ UK</p>	<p>Multi-component interventions Included study design(s) 18 RCTs</p> <p>Population Adults over the age of 60 living in the community (N = 4,202)</p> <p>Intervention(s) Exercise (17 trials) in addition to:</p> <ul style="list-style-type: none"> • education (4 trials) • home safety (3 trials) • nutrition (2 trials) • psychological interventions (3 trials) • home safety and nutrition (1 trial) • home safety and vision assessment (2 trials) • nutrition and psychological interventions (2 trials) <p>Comparator(s) Usual care or attention control (intervention not thought to reduce falls – e.g., general health education or social visits) (17 studies) Exercise alone (5 trials)</p> <p>Main study outcomes There is moderate-quality evidence that multi-component interventions probably reduce the rate of falls (rate ratio = 0.74; 95% CI, 0.60 to 0.91) and risk of falls (RR = 0.82; 95% CI, 0.74 to 0.90). There is low-quality evidence that multiple interventions may reduce the risk of recurrent falls, although a small increase cannot be ruled out (RR = 0.81; 95% CI, 0.63 to 1.05). The effects of multiple component interventions on the risk of fall-related fractures or fall-related hospital admission is uncertain due to lack of evidence. There is low-quality evidence that multiple interventions may have little or no effect on the risk of requiring medical attention (RR = 0.95; 95% CI, 0.67 to 1.35); conversely, they may slightly improve health-related quality of life (SMD = 0.77; 95% CI, 0.16 to 1.39). There is low-quality evidence of little or no difference between the multi-component interventions and exercise alone in rate of falls (1 trial) and risk of falling (RR = 0.93; 95% CI, 0.78 to 1.10). The effects of multi-component interventions compared with exercise alone on hospital admission is uncertain due to lack of evidence.</p>	<p><i>"Despite their appeal as a strategy to prevent falls in older people living in the community, the findings from our review show that while multifactorial interventions may reduce the rate of falls compared with those who receive usual care or an attention control, there may be little or no difference in other fall-related outcomes."</i> Page 45</p> <p><i>"Multiple component interventions, where exercise was a key component, probably reduce the rate of falls and the risk of sustaining one or more falls and may reduce the risk of recurrent falls. Such interventions may make little or no difference to the number of people requiring medical attention but may slightly improve quality of life. There was insufficient evidence to determine the effects on fall-related fracture or hospital admission."</i> Page 45</p>

First author, publication year, country	Study details	Authors' conclusion
	<p>Multifactorial interventions Included study design(s) 44 RCTs</p> <p>Population Adults over the age of 60 living in the community (N = 15,733)</p> <p>Intervention(s) Exercise (37 trials) Environment/assistive technologies (e.g., home hazard assessment and modifications, referral to occupational therapist) (34 trials) Medication review (28 trials) Psychological interventions (e.g., cognitive behavioural intervention, referral to mental health services) (19 trials)</p> <p>Comparator(s) Usual care or attention control (intervention not thought to reduce falls – e.g., general health education or social visits) (43 trials) Exercise alone (1 trial)</p> <p>Main study outcomes Multifactorial interventions may reduce the rate of falls compared with control (rate ratio = 0.77; 95% CI, 0.67 to 0.87 – low-quality evidence). There was low-quality evidence of little or no difference in the risks of falling – i.e., people sustaining 1 or more falls (RR = 0.96; 95% CI, 0.90 to 1.03); recurrent falls (RR = 0.87; 95% CI, 0.74 to 1.03); falls-related hospital admissions (RR = 1.00; 95% CI, 0.92 to 1.07); or falls requiring medical attention (RR = 0.91; 95% CI, 0.75 to 1.10). There is low-quality evidence that multifactorial interventions may reduce the risk of fall-related fractures (RR = 0.73; 95% CI, 0.53 to 1.01) and may slightly improve health-related quality of life but not noticeably (SMD = 0.19; 95% CI, 0.03 to 0.35). The effects on rate of falls or risk of falling of multifactorial interventions vs. exercise alone are uncertain due to lack of evidence.</p>	

First author, publication year, country	Study details	Authors' conclusion
<p>Hopewell, 2019⁹⁵ UK</p>	<p>Included study design(s) 41 RCTs (≥ 12-month follow-up)</p> <p>Population Adults over the age of 65 living in a community (N = 19,369)</p> <p>Multifactorial interventions Exercise (35 trials) Environment/assistive technologies (31 trials) Medication review (25 trials) Psychological interventions (17 trials)</p> <p>Comparator(s) Usual care, meaning no change in usual activities (34 trials), or usual care plus advice in either written, audio, or visual format (7 trials)</p> <p>Main study outcomes Multifactorial interventions may reduce the rate of falls (rate ratio = 0.79; 95% CI, 0.70 to 0.88 – low-quality evidence), and slightly lower the risk of sustaining 1 or more falls (RR = 0.95; 95% CI, 0.90 to 1.00 – moderate-quality evidence) and the risk of recurrent falls (RR = 0.88; 95% CI, 0.78 to 1.00 – moderate-quality evidence). However, there may be little or no difference in other fall-related outcomes such as fall-related fractures (RR = 0.73; 95% CI, 0.53 to 1.01), falls requiring hospital admission (RR = 1.00; 95% CI, 0.92 to 1.08), falls requiring medical attention (RR = 0.98; 95% CI, 0.84 to 1.14), and health-related quality of life (SMD = 0.13; 95% CI, -0.01 to 0.26).</p>	<p><i>"Despite current guideline recommendations promoting the use of multifactorial interventions for preventing falls in older people living in the community, the results of our systematic review show that while multifactorial interventions may reduce the rate of falls and slightly reduce risk of people sustaining one or more falls and recurrent falls, they may make little or no difference to other fall-related outcomes (such as fall-related fractures, falls requiring hospital admission or medical attention, health-related quality of life). There is some evidence to suggest that the effect of multifactorial interventions in reducing the rate of falls may be smaller when compared with usual care plus non-tailored falls prevention advice (in either written, audio or visual format) as opposed to usual care only (ie, no change in usual activities)."</i> Page 10</p>
<p>Cheng, 2018⁹⁸ China</p>	<p>Included study design(s) 49 RCTs</p> <p>Population Adults over the age of 60 living in community (N = 27,740)</p> <p>Multifactorial interventions Exercise (20 trials) Education (15 trials) Risk assessment (7 trials) Medical care (5 trials) Hazard assessment (8 trials) Multifactorial (20 trials)</p> <p>Comparator Usual care (no specific fall intervention)</p>	

First author, publication year, country	Study details	Authors' conclusion
	<p>Main study outcomes</p> <p>Compared with usual care, multifactorial interventions demonstrated the greatest efficacy for preventing falls (OR = 0.64; 95% CI, 0.53 to 0.77), followed by interventions combining education and exercise (OR = 0.65; 95% CI, 0.38 to 1.00), interventions combining exercise and hazard assessment (OR = 0.66; 95% CI, 0.40 to 1.04), and exercise-only interventions (OR = 0.67, 95% CI, 0.52 to 0.84). Medical care-only interventions performed the worst for preventing falls (OR = 1.02; 95% CI, 0.78 to 1.34).</p>	<p><i>"MFI and exercise appear to be effective to reduce falls among older adults, and should be considered first as service delivery options."</i></p> <p>Page 1</p>

CA = cognitive activity; CBT = cognitive-based therapy; CI = confidence interval; ES = effect size; HD-IV3 = high-dose influenza vaccine; IQR = interquartile range; IPD = invasive pneumococcal disease; MDS = Mediterranean Diet Score; MD = mean difference; MedDiet = Mediterranean diet; MFI = multifactorial intervention; NR = not reported; OR = odds ratio; PA = physical activity; PCV13 = pneumococcal 13-valent conjugate vaccine; PPV23 = pneumococcal 23-valent polysaccharide vaccine; QoL = quality of life; RCT = randomized controlled trial; RR = risk ratio; rVE = relative vaccine efficacy or effectiveness; SD-IV3 = standard-dose influenza vaccine; SE = standard error; SMD = standardized mean difference; VE = vaccine efficacy or effectiveness; vs. = versus.

Table 4: Systematic Reviews of Interventions Showing Limited or No Benefits

First author, publication year, country	Study details	Authors' conclusion
Community screening for visual impairment		
Clarke, 2018 ¹²³ UK	<p>Included study design(s) 10 RCTs</p> <p>Population Adults over 65 years of age in community setting (N = 10,608)</p> <p>Intervention(s) Vision screening alone or as part of multi-component screening program</p> <p>Comparator(s) No screening</p>	<p><i>"There is no evidence that community screening for visual impairment reduces the level of visual impairment in people living independently in the community. Further research on the barriers to accessing care at older ages is needed, as well as research investigating the effect of vision screening on more dependent populations of older people."</i></p> <p>Page 2</p>
Protein supplementation to improve muscle strength and physical performance		
ten Haaf, 2018 ¹²⁴ Netherlands	<p>Included study design(s) 36 RCTs</p> <p>Population Non-frail community-dwelling older adults over the age of 50 years (N = 1,683)</p> <p>Intervention(s) Protein supplementation (e.g., whey or milk protein, essential amino acids, multi-ingredient supplements with protein, food products with high protein content, including ricotta, lean red meat, dairy, or soy.)</p> <p>Comparator(s) Control including carbohydrates</p>	<p><i>"Protein supplementation in nonfrail community-dwelling older adults does not lead to increases in lean body mass, muscle cross-sectional area, muscle strength, or physical performance compared with control conditions; nor does it exert superior effects when added to resistance training. Habitual protein intakes of most study participants was already sufficient and protein interventions differed in terms of type of protein, amount, and timing."</i></p> <p>Page 1043</p>
Computerized cognitive training		
Gates, 2019 ⁸⁸ Australia	<p>Included study design(s) 8 RCTs</p> <p>Population Cognitively healthy adults over 65 years of age (N = 1,183)</p> <p>Intervention(s) Computerized cognitive training lasting at least 12 weeks (including computer exercises, computer games, mobile devices, gaming consoles, and virtual reality) that involved repeated practice on standardized exercises for the purpose of enhancing cognitive function</p> <p>Comparator(s) Other activities such as watching educational videos or no activity at all</p>	<p><i>"We found little evidence from the included studies to suggest that 12 or more weeks of CCT improves cognition in healthy older adults. However, our limited confidence in the results reflects the overall quality of the evidence... Inconsistency between trials was a major limitation."</i></p> <p>Page 2</p>

First author, publication year, country	Study details	Authors' conclusion
Exergaming for cognitive benefits		
Stojan, 2019 ⁸⁹ Germany	<p>Included study design(s) 12 RCTs, 2 UCTs, 1 uncontrolled study</p> <p>Population Healthy adults over the age of 60 without major physiological, cognitive, or psychological conditions (N = 750)</p> <p>Intervention(s) Exergames (including dance and step video games, commercial home video game consoles, stationary bicycles with different interactive virtual components, virtual kayak program)</p> <p>Comparator(s) Traditional exercises (such as stationary cycling, treadmill walking), conventional physiotherapy</p>	<p><i>"Overall, exergaming has been shown to yield only very inconsistent benefits only on specific cognitive functions (mainly executive functions) and appears to be approximately equally beneficial as compared to other forms of physical exercise."</i></p> <p>Page 14</p>
Interventions for reducing social isolation		
Veazie, 2019 ¹²⁵ US	<p>Included study design(s) 7 RCTs, 8 pre-post, 1 cross-sectional</p> <p>Population Healthy adults over the age of 60 living in the community (N = 17,656)</p> <p>Intervention(s) Physical activity Social interventions Arts and recreation Improved health services access</p> <p>Comparator(s) Not reported</p>	<p><i>"Of interventions to reduce social isolation, physical activity interventions show the most promise at improving the health of older adults; however, effects were inconsistent and studies short term. Information on the effect of interventions on health care utilization is sparse and inconsistent."</i></p> <p>Page vii</p>
Information and communications technology interventions for reducing social isolation		
Chen, 2016 ⁹⁰ China	<p>Included study design(s) 6 RCTs, 6 cohort studies, 4 cross-sectional studies, 14 qualitative studies</p> <p>Population Older adults over 55 years of age living in the community (N = 8,002)</p> <p>Intervention(s) Internet or web-based apps on computers (e.g., search, email, online chat rooms, videoconferencing, social networking apps, web-based telehealth systems), smartphone apps, iPad apps, video game systems, visual pet companion apps</p> <p>Comparator(s) No intervention</p>	<p><i>"ICT use was consistently found to affect social support, social connectedness, and social isolation in general positively. The results for loneliness were inconclusive. Even though most were positive, some studies found a nonsignificant or negative impact. More importantly, the positive effect of ICT use on social connectedness and social support seemed to be short-term and did not last for more than six months after the intervention."</i></p> <p>Page 1</p>

First author, publication year, country	Study details	Authors' conclusion
Web-based interventions targeting cardiovascular risk factors		
Beishuizen, 2016 ⁹¹ Netherlands	<p>Included study design(s) 57 RCTs</p> <p>Population Older adults over 50 years of age with 1 or more cardiovascular risk factors or established cardiovascular disease (N = 19,682)</p> <p>Intervention(s) Web-based interventions for cardiovascular risk factor management (including blood pressure, blood glucose, blood cholesterol, weight, level of exercise) for the primary or secondary prevention of cardiovascular disease.</p> <p>Comparator(s) Usual care or other types of interventions, including written educational materials</p>	<p><i>“Web-based interventions have the potential to improve the cardiovascular risk profile of older people, but the effects are modest and decline with time. Currently, there is insufficient evidence for an effect on incident cardiovascular disease.”</i></p> <p>Page e55</p>

CCT = computerized cognitive training; ICT = information and communications technology; RCT = randomized controlled trial; UCT = uncontrolled clinical trial.

Appendix 4: Programs and Initiatives for Healthy Aging

Table 5: Canadian Best Practices Portal Evidence-Based Healthy Aging Programs, Interventions, and Initiatives

Description	Evaluation	Adaptability
Falls prevention		
Finding Balance, University of Alberta^{126,127}		
<p>A campaign designed to raise awareness of preventing slips, trips, and falls among older Canadians. The campaign provides information for older adults as well as tools for practitioners. The program promotes real life strategies that older adults can implement to reduce their risk of falling.</p> <p>Each province has unique resources, many particular to its population. They include a variety of posters, brochures, infographics, videos, and other educational materials, all free to download.</p> <p>Finding Balance was developed by the Injury Prevention Centre at the University of Alberta in partnership with seniors' groups, health care organizations, and practitioners across Canada.</p>	<p>Over the course of a 4-year evaluation (2008 to 2011), Finding Balance increased awareness in older adults that falls are the leading cause of hospitalization. The number of older adults taking action to prevent falls increased by approximately 15%.</p>	<p>Implementation history The program is administered across Canada by the program's provincial stewards. Various partners such as regional health authorities, public health organizations, and community health groups have been tasked with delivering and administering the program in their respective regions.</p> <p>Expertise required No specialized training is required. The program can be implemented by volunteers, program staff, and other members of the community.</p> <p>Implementation supports Provincial coordinators and secretariat in Alberta (Injury Prevention Centre) and Ontario (Ontario Injury Prevention Resource Centre)</p> <p>Associated resources or products Tools, forms, evaluation instruments, and sample media copy are available at both sites.</p>
Stay On Your Feet, Injury Control Council of Western Australia^{100,128,129}		
<p>A program that aims to reduce falls and falls-related injuries among older adults living in the community. The core strategies of the program include raising awareness, community education, policy development, home hazard reduction, and media campaigns, and working with health professionals. The use of local knowledge, leadership, and expertise is</p>	<p>Results from a 4-year cohort study of adults over the age of 60 showed a 22% (P = 0.17) reduction of self-reported falls and a 20% (P < 0.01) lower falls-related hospitalization rate in the program group. Increased falls knowledge, physical activity, improved balance, and reduced intake of falls-related medications were also observed in the program group.¹³⁰</p>	<p>Implementation history The program has been implemented in Ontario. Other jurisdictions are at various stages in the process of implementing the program.</p> <p>Expertise required Practitioners with advanced skills</p>

Description	Evaluation	Adaptability
<p>emphasized while fostering community partnerships. A variety of falls prevention resources is offered, including free exercise classes in the community and opportunities for networking.</p>		<p>Implementation supports Support can be obtained from various Canadian jurisdictions at various stages in the process of implementing the program.</p> <p>Associated resources or products Numerous documents and tools are available on the program's Australian website as well as various websites of Canadian jurisdictions that have implemented the program.</p>
<p>The Central Sydney Tai Chi Trial, Sydney South West Area Health Service^{131,132}</p>		
<p>As randomized controlled trial of a community-based weekly 1-hour tai chi program of 16 weeks' duration for healthy, community-dwelling older adults. Classes are led by community tai chi instructors with at least 5 years of experience teaching tai chi or other gentle exercise programs to older people.</p>	<p>Results from the trial in 702 healthy adults over the age of 60 showed falls were less frequent in the tai chi group after 16 weeks (HR = 0.72; 95% CI, 0.51 to 1.01) and after 24 weeks (HR = 0.67; 95% CI, 0.49 to 0.93; P = 0.02) compared with the control. There were also statistically significant differences in changes in balance favouring the tai chi group. There was no difference in the percentage of participants who had 1 or more falls.¹³¹</p>	<p>Implementation history The program has not been implemented in Canada.</p> <p>Expertise required Practitioners with advanced skills</p> <p>Implementation supports None</p> <p>Associated resources or products None</p>
<p>No Falls! No Fear! Falls Prevention Project, University of Queensland^{133,134}</p>		
<p>A 2-year multi-component health promotion project targeting major risk factors for falls in healthy older adults living in the community. The goal is to reduce the incidence of slips, trips, and falls.</p>	<p>A randomized controlled trial was conducted in 252 healthy adults over the age of 50 living in the community. Participants were randomly allocated to 4 intervention groups. The interventions combined the strategies in an add-on approach:</p> <ul style="list-style-type: none"> • The first intervention group (the control) received an oral presentation, with a video on home safety and a pamphlet on the risk factors and prevention of falls. • The second intervention group was offered, in addition, a 1-hour exercise class once a month with the use of exercise handouts and a gentle exercise video encouraged between classes to improve strength and balance. 	<p>Implementation history The program has been implemented at several sites in Australia but not in Canada.</p> <p>Expertise required Practitioners with advanced skills</p> <p>Implementation supports None</p> <p>Associated resources or products Video on home safety, pamphlet on falls risk factors and the prevention of falls, exercise handouts, and exercise video.</p>

Description	Evaluation	Adaptability
	<ul style="list-style-type: none"> In addition to the presentation and exercise classes, the third intervention group was offered a home safety assessment to modify environmental hazards with financial and practical assistance to make home modifications. For the fourth group, participants were offered a clinical assessment and advice on medical risk factors for falls, as well as the other 3 components. <p>HRs comparing the combined intervention groups with the control indicated a 58% reduction in the risk of slips, a 64% reduction in the risk of trips, and a 30% reduction in the risk of falls.¹³³</p>	
Complex Obstacle Negotiation, Kyoto University Graduate School of Medicine^{135,136}		
<p>An RCT of a 24-week group exercise program supervised by a physiotherapist. Sessions are 45 minutes long once a week and use a standardized format that includes 10 minutes of moderate-intensity aerobic exercise, 15 minutes of progressive strength training, 10 minutes of flexibility and balance exercises, and 10 minutes of cool-down activities. The complex obstacle avoidance training involves sequentially passing 15 flags while avoiding obstacle blocks.</p>	<p>A total of 157 adults over the age of 75 were randomly assigned to 1 of 2 training groups: standardized training with the complex course obstacle exercise or standardized training with simple course obstacle negotiation exercise (avoiding contact with obstacles along a walkway). The results showed that the participants who received complex obstacle avoidance training combined with a traditional intervention had a lower incidence rate of falls (IRR = 9.37; 95% CI, 2.26 to 38.77) and fractures (IRR = 7.89; 95% CI, 1.01 to 61.49) during the 12 months after the intervention.</p>	<p>Implementation history The program has not been implemented in Canada.</p> <p>Expertise required Practitioners with advanced skills</p> <p>Implementation supports None</p> <p>Associated resources or products None</p>
Physical activity		
Get Fit For Active Living, Canadian Centre for Activity and Aging^{137,138}		
<p>Get Fit For Active Living is an 8-week education and exercise program designed to introduce older adults to the benefits of exercise and an active lifestyle. The program consists of 3 hours of strength and cardio and a 1-hour education class each week led by a trained facilitator. Participants learn how to get started on a regular exercise program and learn about the importance of a healthy, active lifestyle for maintaining independence.</p>	<p>A quasi-experimental pretest–post-test study investigated 210 healthy but physically inactive community-dwelling older adults over the age of 65. After the 8-week program, significant improvements were noted in measures of functional and physical fitness, exercise self-efficacy, and exercise tolerance.¹³⁹</p>	<p>Implementation history This program is delivered nationally in Canada.</p> <p>Expertise required The intervention does not require individuals or groups with specialized training, but requires individuals or groups to be trained as part of the implementation process.</p>

Description	Evaluation	Adaptability
		<p>Implementation supports The Canadian Centre for Activity and Aging trains facilitators to deliver the 8-week program in their communities.</p> <p>Associated resources or products A facilitator workshop guide as well as resource manual for participants is also available.</p>
<p>Community Healthy Activities Model Program for Seniors II, University of California^{140,141}</p>		
<p>A 1-year intervention that aims to increase the lifetime physical activity levels of older adults through developing personal physical activity capacities and supporting behaviour change. The Community Healthy Activities Model Program for Seniors II guides participants to choose activities that take into account their health, preferences, and abilities. It offers information on ways for them to exercise safely, motivate themselves, overcome barriers, and develop a balanced exercise regimen.</p>	<p>A 1-year RCT was conducted in 173 physically underactive adults over the age of 65 in a multi-specialty group practice. Caloric expenditure in the intervention group increased by 487 calories per week during moderate (or greater) intensity activities ($P < .001$) and by 687 calories per week during physical activities of any intensity ($P = .001$). Control group changes were negligible. Overweight individuals especially benefited from this program. The program was equally as effective for women, older adults over the age of 75, and those who did not set aside time to exercise at baseline. Results indicate that individually tailored programs to encourage lifestyle changes in older adults may be effective and applicable to health care and community settings.</p>	<p>Implementation history The program has informed the development and implementation of other programs in Canada such as Choose to Move in British Columbia.</p> <p>Expertise required Practitioners with advanced skills</p> <p>Implementation supports Work was supported by the U.S. National Institute on Aging Grant</p> <p>Associated resources or products Manual describing the program in detail¹⁴²</p>
<p>Senior Health and Physical Exercise, Oregon Research Institute^{143,144}</p>		
<p>A neighbourhood-based RCT of a walking program for adults 65 and older designed to improve quality of life. The intervention consists of a leader-led walking program 3 times per week for 6 consecutive months. Participants joined their group of neighbourhood peers and 2 walking leaders. Each walking session lasted approximately 1 hour and consisted of stretching and warm-up exercises, a 30- to 40-minute leisurely but purposeful walk in or near their neighbourhood, and a set of cool-down exercises.</p>	<p>A total of 582 community-dwelling adults over the age of 65 were randomized to the walking intervention delivered at the neighbourhood level or an information-only control group. The results demonstrated that, compared to control neighbourhoods, participants in intervention neighbourhoods showed significant improvements in indicators of quality of life and walking activity.</p>	<p>Implementation history The program has not been implemented in Canada.</p> <p>Expertise required The intervention does not require individuals or groups with specialized training, but requires individuals or groups to be trained as part of the implementation process.</p> <p>Implementation supports Walking leaders are provided with a 5-hour training and orientation.</p> <p>Associated resources or products Detailed handbook for walking leaders and information booklet to walkers</p>

Description	Evaluation	Adaptability
Nutrition		
Food Skills for Families, BC Centre for Disease Control^{145,146}		
<p>A hands-on curriculum-based program developed by community-based dietitians and educators that empowers participants to eat well by creating fast easy meals using fresh, whole ingredients. It is led by trained community facilitators and offered as a 6-session program to the following priority populations: active older adults, low-income individuals, newcomers, and Punjabi and Indigenous peoples. Participants gain knowledge of basic nutrition, learn how to shop and make healthy meals, snacks and beverage choices, and gain confidence in the kitchen.</p> <p>The program's Cooking Connections program is specifically designed for older adults and focuses on eating well and staying active for overall great health. It also provides an opportunity to meet new friends and reinforces healthy eating habits.</p>	<p>A formal evaluation was undertaken to assess the impact of the program. All participants complete a pre- and post-evaluation to measure the skills and confidence gained through program participation. Participants report eating more vegetables and fruits every day, having a higher level of knowledge of what foods are healthy, cooking more meals from scratch, and having a higher level of confidence in the kitchen.¹⁴⁷</p>	<p>Implementation history The program has been delivered in more than 150 communities throughout British Columbia. Collaborative work with health authorities and other provincial, regional, and community programs continues to extend the reach and enhance equitable distribution of the program.</p> <p>Expertise required The intervention does not require individuals or groups with specialized training, but it requires individuals or groups to be trained as part of the implementation process.</p> <p>Implementation supports As part of each community facilitator's ongoing support and education, the Canadian Diabetes Association hosts a series of webinar-based conference calls periodically throughout the year. Several resources for community facilitators have been developed, including promotional posters and brochures, session resources, and forms and templates for all programs.</p> <p>Associated resources or products A handbook called <i>Healthy Eating for Seniors</i>¹⁴⁸</p>
Social isolation		
Experience Corps, AARP Foundation^{149,150}		
<p>Experience Corps is a high-commitment national volunteer program in the US that brings older adults over the age of 50 into high-need public elementary schools to improve academic achievement of students. It is viewed as a health promotion program for the older volunteers and a way to decrease social isolation.</p>	<p>The impact of the program was evaluated in a quasi-experimental study involving volunteers from 17 sites across the US. Compared to the matched comparison group, program volunteers reported fewer depressive symptoms and functional limitations 2 years after participation in the program. There was also a statistical trend toward slower decline in self-rated health.¹⁵¹</p>	<p>Implementation history Local communities implement the programs, which are usually hosted at the city level by non-profit or public agencies. The program has been implemented at several sites nationally in the US but not in Canada.</p>

Description	Evaluation	Adaptability
		<p>Expertise required The intervention does not require individuals or groups with specialized training, but it requires individuals or groups to be trained as part of the implementation process.</p> <p>Implementation supports To be a part of the Experience Corps national program, local sites adhere to program missions and standards, participate in national training and support activities, and receive assistance with fundraising and expansion efforts.</p> <p>Associated resources or products None</p>

CI = confidence interval; HR = hazard ratio; IRR = incidence rate ratio; RCT = randomized controlled trial.

Table 6: Canadian Programs and Initiatives for Healthy Aging

Name, origin, and/or funding	Description
National	
<p>Senior fitness leadership training and exercise programs¹⁵²</p> <p>CCAA, University of Western Ontario</p>	<p>CCAA provides evidence-based, active aging education for health care professionals, fitness leaders, volunteers, and family members. CCAA has developed model exercise programs for older adults that promote functional mobility. Exercise program leaders are trained and certified in the Seniors' Fitness Instructor Course. The exercise programs are delivered nationally in a variety of settings including community locations, long-term care facilities, retirement living facilities, adult day programs, and at home. CCAA exercise programs offered to community-dwelling older adults include combined fitness classes, dynamic balance training, personal training, strength training, and yoga.</p>
<p>Together In Movement and Exercise¹⁵³</p> <p>Toronto Rehabilitation Institute</p>	<p>Together In Movement and Exercise is a community-based program for people with balance and mobility challenges including older adults to help them stay active in their community. The group exercise program is led by fitness instructors in numerous community centres across the country. Classes meet once or twice weekly for 1 hour. Each session lasts about 8 to 12 weeks.</p>
<p>Canadian Longitudinal Study of Aging^{154,155}</p> <p>Funded by the Canadian Institutes of Health Research</p>	<p>The Canadian Longitudinal Study of Aging is a large, national, long-term study that will follow approximately 50,000 cognitively intact, community-dwelling individuals who are between the ages of 45 and 85 for at least 20 years. It is one of the most comprehensive research platforms for aging research. The Canadian Longitudinal Study of Aging collects information on the changing biological, medical, psychological, social, lifestyle, and economic aspects of people's lives. These factors are being studied to understand how, individually and in combination, they impact both the maintenance of health and the development of disease and disability as people age.</p>

Name, origin, and/or funding	Description
<p>Collective impact projects to reduce social isolation¹⁵⁶</p> <p>Funded by the New Horizons for Seniors Program</p>	<p>These consist of nine collective impact projects designed to reduce social isolation among older adults at the population level. Areas of investigation include Vancouver, Nanaimo, Edmonton, south and central Saskatchewan, Hamilton, Ottawa, Toronto, Montreal, and Quebec City. While all are working toward the same goal, the projects have focused on different older adult populations and have developed different theories of change, diverse partnerships, and unique approaches to addressing social isolation.</p>
<p>Activate¹⁵⁷</p> <p>Heart and Stroke Foundation</p>	<p>A free 6-month wellness program that helps older adults who are at risk for stroke and heart disease – but are not currently on blood pressure medication – to lower their blood pressure with diet, exercise, and stress management. Participants benefit from various incentives, including:</p> <ul style="list-style-type: none"> • an online health platform with curated content and trackers • a personal health coach • access to a dietitian • a 2-month free membership to a participating YMCA or YWCA • a free personal training session. <p>The program is currently offered in Ontario, British Columbia, Saskatchewan, and Alberta.</p>
<p>Loop¹⁵⁸</p> <p>Funded by the Ontario Ministry of Research and Innovation and sponsored by the Ontario Neurotrauma Foundation</p>	<p>Loop is the online community of practitioners, caregivers, researchers, and policy planners across Canada who have an interest and/or work in the area of falls prevention. Loop is a platform to inform, share ideas, and provide support to improve the implementation of evidence-informed falls prevention practices.</p>
<p>Pan-Canadian Seniors’ Falls Prevention Network^{159,160}</p> <p>Funded by the Public Health Agency of Canada and led by Parachute Canada</p>	<p>In collaboration with other organizations focused on injury prevention across Canada, Parachute Canada has created an online hub for individuals and health professionals, making it easier for them to find tools, resources, and information related to falls prevention and recovery. Parachute Canada is a national charity whose mission is to create a safer Canada by preventing serious and fatal injuries through evidence-based solutions. The Pan-Canadian Seniors’ Falls Prevention Network provides the opportunity for leading falls prevention professionals to share knowledge and experiences; support individual and collective initiatives, policies, and research; and further the work of falls prevention throughout Canada.</p>
<p>Canadian Deprescribing Network^{161,162}</p> <p>Funded by the Canadian Institutes of Health Research and Ministère de la Santé et des Services sociaux du Québec</p>	<p>The Canadian Deprescribing Network is a group of health care leaders, clinicians, decision-makers, academic researchers, and patient advocates working together to mobilize knowledge and promote the deprescribing of medication that may no longer be of benefit or that may be causing harm. Goals are to:</p> <ul style="list-style-type: none"> • raise awareness and eliminate the use of potential inappropriate medications for older Canadians • ensure access to safer drug and non-drug therapies.

Name, origin, and/or funding	Description
	<p>The Canadian Deprescribing Network uses a practical, comprehensive, and ecological approach to optimize medication use through coordinated action across Canada's health system.</p> <p>Evaluation A cluster randomized trial evaluated a pharmacist-led intervention on 489 community-dwelling older adults in Quebec using educational materials from the Canadian Deprescribing network. These materials were distributed to both patients and their prescribers. At 6 months, the percentage achieving discontinuation of a targeted inappropriate prescription was 43% among patients receiving the intervention vs. 12% among patients receiving usual care (mean difference = 31%; 95% CI, 23% to 38%).¹⁶³</p>
<p>Home Modification Council¹⁶⁴</p> <p>Canadian Home Builders' Association</p>	<p>The council supports many aspects of aging in place for Canada's older adults and their caregivers, including:</p> <ul style="list-style-type: none"> • appropriate home modifications • appropriate training for renovators • access to occupational therapists, trained architects and designers, and community care professionals • information about disability funding organizations, government loans, grants and tax credits, and assistive device and industry representatives.
<p>Social isolation tool kits¹⁶⁵</p> <p>Government of Canada</p>	<p>A series of tool kits produced by the Federal/Provincial/Territorial Ministers Responsible for Seniors Forum. The tool kits present tools to help individuals and organizations develop lasting community partnerships and programs to reduce the social isolation of older adults, including those belonging to minority groups such as new immigrants and refugees, Indigenous groups, and LGBTQ communities.</p>
<p>Canadian Falls Prevention Curriculum¹⁶⁶</p> <p>Developed by a team of experts in falls prevention, adult education, and clinical practice with funding provided by the Public Health Agency of Canada, Population Health Fund</p>	<p>The Canadian Fall Prevention Curriculum provides those working with older adults the knowledge and skills needed to apply a public health approach to the prevention of falls and fall-related injuries by learning how to apply an evidence-based approach to design, implement, and evaluate a falls prevention program tailored to their work or community setting. The curriculum is designed to build on existing knowledge and skills of health professionals and community leaders working in the area of fall and injury prevention among older adults (those 65 and over).</p>
<p>New Horizons for Seniors Program¹⁶⁷</p> <p>Government of Canada</p>	<p>Provides grants and contributions funding for community-based and pan-Canadian projects that impact the lives of older adults in their communities.</p> <p>The program has 5 objectives:</p> <ul style="list-style-type: none"> • promoting volunteerism among older adults and other generations • engaging older adults in the community through the mentoring of others • expanding awareness of elder abuse, including financial abuse • supporting the social participation and inclusion of older adults • providing capital assistance for new and existing community projects and programs for older adults. <p>A list of approved projects is available on the program's website.¹⁶⁷</p>

Name, origin, and/or funding	Description
Provincial, territorial, and community-based	
British Columbia	
<p>Choose to Move^{107,108}</p> <p>Active Aging BC with funding from the British Columbia Ministry of Health</p>	<p>A free, evidence-based, 6-month personal planning and support program designed for older adults over the age of 65 who are not regularly active. It is a custom choice-based program that fits all interests, goals, and abilities. An action plan for physical activity is created by working with an activity coach (certified older adult fitness instructors or kinesiologists) who also provide ongoing support through monthly group meetings (to connect with fellow participants to learn about health topics and share successes and challenges), one-on-one consultations, and regular check-ins. The program is delivered in partnership with BC Recreation and Parks Association and the YMCA across British Columbia.</p> <p>Evaluation</p> <p>The effectiveness of the program on physical activity, mobility, and social connectedness was evaluated using a hybrid effectiveness–implementation study design. Two community delivery partner organizations delivered 56 Choose to Move programs in 26 large and small urban locations across British Columbia and survey data were collected from 458 participants. Physical activity increased significantly during the active intervention phase (baseline to 3 months) in participants both younger, at 60 to 74 years of age (+ 1.6 days per week; $P < 0.001$) and older, at 75 years of age and older (+ 1.0 days per week; $P < 0.001$). The increase was sustained at 6 months in younger participants only, who remained significantly more active than at baseline (+ 1.4 days per week; $P < 0.001$). Social exclusion indicators declined significantly in the younger group. Mobility and strength improved significantly at 3 months in the younger group, and in both groups at 6 months.¹⁰⁹</p>
<p>Falls Prevention Mobile Clinic¹⁶⁸</p> <p>Fraser Health Authority</p>	<p>A multidisciplinary falls prevention approach targeted to older adults living in the community. The free clinic involves a personalized assessment session in which participants have the opportunity to sit one-on-one with health professionals (pharmacists, kinesiologists, and physiotherapists) for a 25-minute session. At that time, various aspects of the person's fall risk status are assessed, and interventions are discussed. A detailed report of all recommendations is provided to the participant and also sent to their primary physician and any referring health professional, if applicable. The total time spent at the clinic is approximately 90 minutes. The clinic travels to many different locations in the Fraser Health region, including community centres, faith-based temples and churches, seniors' housing complexes, and other locations where older adults gather.</p>
<p>Safety Superheroes¹⁶⁹</p> <p>Fraser Health Authority and Vancouver Coastal Health</p>	<p>A program delivered by facilitators at schools or libraries that promotes a multi-generational approach to falls prevention. The kit, including a storybook and e-resources, focuses on teaching kids (ideally aged 5 to 8) how to prevent their grandparents from falling.</p>
<p>Seniors Hub Model¹¹¹</p> <p>Allies in Aging</p> <p>Funded in part by the Government of Canada's New Horizons for Seniors Program</p>	<p>With a focus on community-based capacity building, active and engaged older adults were empowered to find meaningful ways of reaching out and connecting to vulnerable older adults in their communities. The goal of the project was to support the independence and active participation of older adults in community life. An outreach tool kit was produced to support service providers in developing outreach training in their own communities.</p>

Name, origin, and/or funding	Description
	<p>The major outcomes for this program were:</p> <ul style="list-style-type: none"> isolated/under-represented older adults (those who, for example, are living alone, are caregivers, are receiving a lower income, are living with mobility and/or physical challenges, or are immigrants) were identified and connected to appropriate services, information, and community activities diverse volunteer older adults gained the leadership skills, knowledge, and connections needed to sustain their neighbourhood seniors' hub. <p>Seniors and organizations in each neighbourhood were formally connected to their respective hub and increased their capacity for working together to address seniors' issues and services needed in the community, resulting in expanded service scope, depth, and breadth.</p>
<p>Seniors on the Move¹¹¹</p> <p>Allies in Aging Funded in part by the Government of Canada's New Horizons for Seniors Program</p>	<p>A multi-sector collaboration designed to, first, share and enhance existing services and best practices; second, design innovative new services and partnerships; third, help older adults plan for age-related changes to their transportation needs and connect them to appropriate options; and fourth, advocate for improved transportation services. Key accomplishments included the following:</p> <ul style="list-style-type: none"> Partner agencies offered transportation to older adults to keep them connected to the community and reduce social isolation; with limited resources, priority was given to transportation for medical appointments. New volunteer driver recruitment and training strategies <i>were</i> developed, as was an insurance tool kit for managing risk. Transit training workshops were provided for older adults to increase their use of transit and help them navigate the system more effectively. Walking audits were conducted with older adults in Burnaby; these audits documented the condition of walking infrastructure and offered older adults the opportunity to work together to suggest improvement opportunities to municipal officials.
<p>Better at Home Program¹⁷⁰</p> <p>United Way of the Lower Mainland</p>	<p>A program providing non-medical home supports to more than 11,000 older adults in more than 70 communities across British Columbia. Volunteers, contractors, and paid staff from local non-profit organizations provide a range of services, including friendly visiting, transportation, light yard work, minor home repairs, light housekeeping, grocery shopping, and snow shovelling.</p> <p>Evaluation</p> <p>A 2017–2018 provincial evaluation of the program showed that more than 90% of older adults reported that they were satisfied with the frequency, length, affordability, and accessibility of services. The most meaningful impacts of the program reported by older adults were managing the tasks of daily living, and feeling safe, supported, and able to stay in their homes longer. Participants (older adults, volunteers, program staff, and service providers) identified social connectedness as a significant and positive outcome of all program services.¹⁰⁵</p>

Name, origin, and/or funding	Description
<p>Better at Home Rural and Remote Pilot Project¹⁰⁶</p> <p>United Way of the Lower Mainland</p>	<p>The pilot project was launched in April 2015 in 6 rural sites across British Columbia to test new approaches for delivering the Better at Home services in hard-to-serve rural and remote communities, and to inform the program's efforts to effectively service older adults in these areas.</p> <p>Evaluation</p> <p>A 2017 evaluation of findings drawn from 4 groups of key stakeholders (organizational leaders, provincial stakeholders, front-line care providers and family caregivers, and older adults receiving Better at Home services) found that the Better at Home program has reduced gaps in services to older adults to remain living independently in their homes, has had positive impacts on isolation and/or loneliness of older adults, and has provided connection with the community, independence and ability to live safely alone, and awareness and access to services that did not exist previously.¹⁰⁶</p>
<p>SteadyFeet¹⁷¹</p> <p>Partnership between Vancouver Coastal Health, and community and seniors centres</p>	<p>A balance and mobility program for older adults to help prevent falls. To participate in a SteadyFeet program, older adults must be able to be able to walk independently, with or without a mobility aid. The program includes a 20-minute assessment session and 2 sessions per week for 8 weeks to 10 weeks.</p>
<p>Men on the Move¹⁷²</p> <p>Centre for Hip Health and Mobility</p>	<p>Men on the Move is a choice-based physical activity model paired with an active transportation model for promoting physical activity in inactive men. The choice-based physical activity model encourages older men to use existing community-based resources to create and implement action plans for a variety of group-based or individual physical activities. It also provides ongoing face-to-face and telephone-based support from trained activity coaches. The active transportation model provides transit passes and active travel planning to promote the use of transit and walking to destinations of interest.</p> <p>Evaluation</p> <p>A 12-week randomized controlled trial was conducted to provide preliminary evidence of feasibility and efficacy of the program among 58 physically inactive men aged 60 years and older. Results showed that after 12 weeks, participants in the intervention group achieved a higher level of steps, moderately vigorous physical activity, and energy expenditure than those in the control group. Participants in the intervention group were also more likely to take transit and meet national guideline levels of physical activity. At 24 weeks' follow-up, benefits were sustained for moderately vigorous physical activity and energy expenditure in the intervention group.</p>
<p>Physical Activity Services at HealthLink BC¹⁷³</p> <p>HealthLink BC</p>	<p>A free telephone resource for evidence-based physical activity information and professional guidance from a qualified exercise professional for becoming more physically active across the lifespan. Information and advice related to physical activity and exercise is also available by email or a search for information on the website.</p>

Name, origin, and/or funding	Description
<p>Pharmacists Clinic¹⁷⁴</p> <p>University of British Columbia</p>	<p>Patients receive one-on-one time with an expert pharmacist to address their medication questions, demystify complex drug treatments, and optimize their drug therapy outcomes. Family physicians and specialists also refer patients when they are faced with a long medication list and need pharmacist input on services such as deprescribing. Care is focused on achieving the patient's goals in collaboration with other members of the care team, including the patient's local community pharmacist. Pharmacist services are publicly funded and provided at no charge to patients either in person (at the University of British Columbia Vancouver campus), in selected Lower Mainland medical offices, by telephone, or by secure videoconference. The clinic primarily serves British Columbia and some residents of other provinces and territories.</p>
Alberta	
<p>Seniors Helping Seniors¹⁷⁵</p> <p>Funded by Covenant Health Network of Excellence in Seniors' Health and Wellness</p>	<p>The Seniors Helping Seniors program is a tool kit that was developed as a way to augment professional fitness staff resources with specially trained peer leaders (older adults in the community who possess a moderate level of personal fitness and are then trained to work in a voluntary capacity to support and motivate other older adults). The tool kit can be adopted in any site where older adults come together, including seniors' activity centres, independent living facilities, or community buildings used by seniors' day programs. The tool kit is intended for professionals to use in developing or enhancing their seniors' programming. While the ongoing operation of this program requires limited day-to-day involvement from a fitness expert, the program itself should be initiated, overseen, and monitored by a fully certified fitness professional, occupational therapist, or physiotherapist who can train the peer leaders over a 3-month period and provide ongoing oversight of the program. It includes an 8-week seniors' training program and stretch routine that each peer leader must personally complete as part of their training. Peer leader applicants are assessed and coached by fitness experts for 3 months as they progress through the training program.</p>
<p>Seniors for Kids Society¹⁷⁶</p> <p>Partly sponsored by Rocky View County Family and Community Support Services, United Way, Cochrane Family & Community Support Services, and Cochrane Foundation</p>	<p>A not-for-profit organization that provides resources for building intergenerational relationships between youth and older adult volunteers in a school environment, thus improving the quality of life for both groups. This program provides an opportunity for older adult volunteers to participate in a valuable and rewarding experience with youth. Older adults feel a sense of satisfaction when they have impacted another's life for the good.</p>
<p>The Way In network¹⁷⁷</p> <p>Family and Community Support Services, a joint municipal and provincial preventive social services program</p>	<p>This umbrella organization of Calgary-based agencies is comprised of Carya, Jewish Family Service Calgary, the Calgary Seniors' Resource Society, and the Calgary Chinese Elderly Citizens' Association. The Way In team helps connect adults over the age of 65 with services and supports in the community, including:</p> <ul style="list-style-type: none"> • information and referrals • assistance with forms for pensions, benefits, transportation, and housing • caregiver support

Name, origin, and/or funding	Description
	<ul style="list-style-type: none"> • access to volunteer supports • elder abuse intervention and support • Commissioner for Oaths • assessment and case management • group activities and workshops. <p>The organization also works with Elder Brokers, volunteers who provide help in 15 diverse ethno-cultural communities and who speak more than 20 different languages.</p>
<p>PurposeMed online clinic¹⁷⁸</p> <p>PurposeMed Inc.</p>	<p>A free telemedicine service that allows patients to speak with a doctor regarding any health question. This service is focused on providing medical advice to vulnerable and under-served populations, including older adults, those with mobility issues, and those living in rural and remote areas. The service is currently available to residents of Alberta. There are plans to extend the service to Manitoba and Saskatchewan in 2020.</p>
<p>Med Wise Alberta¹⁷⁹</p> <p>University of Alberta and IMAGINE</p>	<p>Med Wise is a peer-led, skill-based educational and behavioural intervention designed for older adults to help manage their medications and improve communication with their pharmacist. A series of pilot projects took place in September 2019. The pilot consisted of 3 groups that gathered in Cold Lake, Bonnyville, and Glendon and La Corey in Alberta. A peer-facilitator led a group of 15 to 20 people through a work booklet, role-playing scenarios, and personal stories. All participants gained knowledge on medications, terminology, communication skills, the role of the pharmacist, and how to develop their own medication plan. Findings from the pilot project are helping to improve the program and shape the curriculum into a 4-hour workshop with the hope of rolling out the project across Alberta.</p>
<p>Supporting Healthy Aging by Peer Education and Support^{112,113}</p> <p>University of Alberta Funding from Covenant Health Network of Excellence in Seniors' Health and Wellness</p>	<p>A study investigating an innovative partnership between seniors' community organizations and clinical faculty at the University of Alberta to provide peer-delivered education and support for older adults living in the community. Health coaches, drawn from community-dwelling older adults, will educate and support their peers in healthy aging behaviours and self-management of chronic disease. The 12-week program contains 4 3-week interactive modules that focus on heart and bone health, nutrition, physical activity, and social engagement. Each module consists of a 1-hour workshop followed by 3 facilitated weekly discussion sessions. Participants are encouraged to take up healthy aging behaviours, undertake self-management techniques or, should they recognize a need, seek formal assistance.</p>
Saskatchewan	
<p>Forever...in motion¹⁸⁰</p> <p>Saskatchewan Health Authority</p>	<p>A program that helps older adults become physically active in their community through volunteer-, peer-, or staff-led physical activity groups. Classes are located primarily in seniors' congregate housing, community centres, churches, condominiums, and leisure centres and are currently operating in many sites throughout the Regina Qu'Appelle Health Region. Activities include endurance, strength, balance, and flexibility components and education about healthy eating.</p>

Name, origin, and/or funding	Description
<p>Staying on Your Feet¹⁸¹</p> <p>Saskatoon Health Region</p>	<p>Balance and education programs</p> <ul style="list-style-type: none"> • Provides free education on falls prevention for older adults • Provides resources on falls prevention to older adults, health professionals, and Forever... in <i>motion</i> leaders • Provides safe physical activities with a focus on balance and falls prevention for older adults • Trains and supports Forever... in <i>motion</i> leaders • Evaluates the effectiveness of falls prevention programming and resources for reducing falls <p>12-week balance and education program</p> <ul style="list-style-type: none"> • Structured and progressive balance exercise program appropriate for seniors' housing complexes, Forever...in <i>motion</i> sites, and seniors' centres • Exercise sessions 2 times per week for 30 minutes to 45 minutes • Education sessions on fall risk factors • Demonstration and development of a personal safety plan and practice on how to get up off the floor <p>5-week balance and education program</p> <ul style="list-style-type: none"> • Program appropriate for seniors' centres, City of Saskatoon leisure centres, and community programming • Education based on risk factors for falls once per week • Progressive balance exercises each week • Demonstration and development of a personal safety plan and practice on how to get up off the floor
<p>Care and Share Seniors Program¹⁸²</p> <p>Funded by Saskatchewan Lotteries</p>	<p>A recreation lunch is held once a week to allow older adults to participate in a free fitness class (Forever...in <i>motion</i>), socialize, and enjoy a meal and games. A certified nurse is available to check blood pressure and blood sugar. A walking program is also available for older adults interested in improving their physical fitness.</p>
<p>Manitoba</p>	
<p>The Wellness Institute¹⁸³</p> <p>Seven Oaks General Hospital</p>	<p>A non-profit organization with a vision to improve community health through the prevention and management of chronic disease. The key factors for healthy aging for older adults are embedded in the programs and services including:</p> <ul style="list-style-type: none"> • a personal exercise and lifestyle plan from an exercise specialist • physical activity through classes and programs for older adults of all fitness levels • healthy food choices with advice from a registered dietitian • emotional and mental wellness • falls prevention • smoking cessation • social connectedness by participating in programs, interacting with staff, and the availability of spaces for people to meet and socialize.

Name, origin, and/or funding	Description
	An annual free Active Aging Day has introduced more than 3,500 older adults to hands-on demonstrations promoting active aging, healthy eating, and social connectedness.
Active Aging in Manitoba presentations¹⁸⁴ Active Aging in Manitoba	Older adult volunteers, who have completed training with Active Aging in Manitoba, provide presentations on a variety of healthy aging and wellness topics, including habits for a healthy lifestyle, active living, falls prevention, oral health, and habits for a healthy brain. These presentations are made in partnership with member organizations and partners.
Steppin' Up with Confidence¹⁸⁵ Active Aging in Manitoba in partnership with the Manitoba Fitness Council	<p>A program that trains volunteers over the age of 55 at no charge to deliver free, peer-led exercise classes for older adults in their communities. During a 2-day workshop, participants learn:</p> <ul style="list-style-type: none"> • the importance of regular physical activity for functional ability • the proper way to do a variety of exercises specific to older adults • how to prepare and lead an exercise class for older adults. <p>All participants also receive a peer leader training manual with all of the exercises and resources to help initiate an exercise class in their community.</p>
Connect Program¹⁸⁶ A & O: Support Services for Older Adults	The Connect Program is an organized companionship and socialization program that seeks to match community volunteers with isolated, lonely, older adults over the age of 55. Volunteers and participants engage in a 1-hour visit once a week in the participant's home. Program participants are provided with information to encourage social activity and participation within the community.
Healthy Aging Resource Teams¹⁸⁷ Winnipeg Regional Health Authority	Healthy Aging Resource Teams work in the community to promote health, increase awareness about injury and illness prevention, provide primary care, and manage chronic diseases for adults older than 55. The teams consist of 2 health care professionals such as a nurse, occupational therapist, or dietitian. Teams hold health clinics, group education workshops, and events at a variety of community sites including apartment blocks, malls, seniors' centres, and churches. Some individual services and referrals are also offered.
Prairie Mountain Health Sedative Deprescribing Initiative¹⁸⁸ Prairie Mountain Health	This initiative focuses on educating people who take benzodiazepines about the risks associated with their use. This project aims to implement a client-centred deprescribing education program based on Choosing Wisely's <i>Drowsy Without Feeling Lousy</i> tool kit. ¹⁸⁹ This program will share information with pharmacists, physicians, and nurses in the Prairie Mountain Health region through department meetings, medication reviews, and online resources.
Ontario	
Exercise and Falls Prevention Programs¹⁹⁰ Government of Ontario	A provincial initiative to deliver free falls prevention classes to adults over the age of 65 at publicly accessible locations in the community. The classes are taught by a physiotherapist or other health professionals and focus on keeping active and improving strength, balance, and mobility. Classes focused on creating safe environments for older adults at home are also offered. This initiative is operated with a low overhead, as it is funded with a small annual provincial investment and delivered in publicly accessible locations by existing community support services agencies.

Name, origin, and/or funding	Description
<p>GERAS To Go¹⁹¹</p> <p>GERAS Centre for Aging Research</p>	<p>An evidence-informed workshop developed by experts at Hamilton Health Sciences and McMaster University to provide older adults, families, and caregivers with information on aging and age-related topics. The workshop enables older adults to make proactive decisions that help them stay healthier, happier, and social for longer through modules delivered by community experts. These modules discuss healthy aging, nutrition, and fitness, among other resourceful topics, for older adults and their caregivers. Each module consists of 6 sessions delivered over 6 consecutive weeks.</p>
<p>Evergreen Action Nutrition Program¹⁹²</p> <p>Evergreen Action Nutrition Advisory Committee</p>	<p>Provides nutrition education to older adults as a means of preventing chronic disease and promoting good health. The program was created by nutritionists and older adults in Guelph and consists of secondary preventive programs such as food demonstrations and workshops conducted at a local seniors' recreation centre. The program offers many additional services, including nutrition counselling, opportunities to sign up for garden fresh boxes, cooking groups, and monthly displays and newsletters.</p> <p>Evaluation</p> <p>In a survey evaluation of the program, it was shown that food demonstrations resulted in the greatest changes in food practices, such as changing cooking methods or increasing fruit and vegetable intake. Overall, older adults who participated in the program had less nutrition risk post-intervention.¹⁹³</p>
<p>SMART¹⁹⁴</p> <p>Victorian Order of Nurses for Canada</p>	<p>SMART are community-based, volunteer-led exercise programs for older adults that accommodate all levels of ability. SMART programs improve strength, balance, and cardiovascular health, and reduce social isolation and hospital visits relating to falls.</p>
<p>Stand Up!¹⁹⁵</p> <p>Algoma Public Health, North Bay Parry Sound District Health Unit, Porcupine Health Unit, Public Health Sudbury & Districts, and Timiskaming Health Unit</p>	<p>A free, best-practice 12-week group exercise program offered twice a week in multiple communities. The program focuses on building balance, strength, and flexibility among older adults who live independently in the community. A pre- and post-program assessment helps participants see their improvement over time. Stand Up! also includes education on healthy lifestyles and safe behaviours as well as home-based exercise.</p>
<p>HIGH FIVE healthy aging training programs¹⁹⁶</p> <p>Parks and Recreation Ontario with funding from the Ontario Trillium Foundation</p>	<p>Principles of Healthy Aging Trainer</p> <p>This 1-day training provides insights into the unique needs of older adults when participating in recreation or leisure activities in municipal centres or retirement communities. It provides evidence-based approaches to improve the experience of participants. Through experiential learning activities, scenarios, and group discussion, leaders will gain knowledge, tips, and resources to enhance their programs as well as their relationships with participants and other staff members. Topics include ageism and program planning as well as the importance that physical literacy plays in sustained long-term health, increased social connectedness, improved mental and physical well-being, and a better quality of life. The program is also available online (Online Healthy Aging QUEST 2).</p>

Name, origin, and/or funding	Description
	<p>Healthy Aging Trainer Training This 2-day training is designed for people responsible for training staff in an organization or simply interested in helping to deliver training to multiple agencies that believe in ensuring older adults participate in quality programs. It helps organizations improve the quality of programs by making a commitment to continuous improvement in the area of healthy aging and training delivery.</p>
<p>A Friendly Voice¹⁹⁷ Rural Ottawa South Support Services Funded by Ontario Trillium Foundation</p>	<p>An initiative designed to provide an option for older adults who may be feeling lonely or isolated. Through phone conversations, volunteers will encourage and support older callers to engage with their community. If requested, volunteers can assist the older adult by providing contact information for local services and programs from publicly accessible information sources. The program is not a counselling service, distress or crisis line, or emergency service. Any calls of that nature will result in immediate contact or referral to the appropriate responders, agency, or service. The program launched in the Ottawa Valley region and has expanded to the rest of Eastern Ontario. It will be introduced to Northern Ontario in 2020.</p>
<p>Health TAPESTRY¹⁹⁸ McMaster University</p>	<p>Health TAPESTRY (Health Teams Advancing Patient Experience: STRenthening Quality) is an intervention designed to improve person-centred and team-based primary care to empower older adults to age successfully in the community. Trained volunteers visit older people in their homes to learn about their health goals and needs. This information is recorded and shared with their health care team (which can include members from primary, community, specialist, or hospital care). This helps the team learn more about that person and how they can better work together to achieve their health goals and meet their needs to stay healthy longer. Volunteers may visit again to check how well a person is meeting those goals. The person's action plan and progress are then shared among the health care team.</p> <p>Evaluation A pragmatic randomized controlled trial in 312 healthy community-dwelling adults aged 70 years and older living in Hamilton found no difference between the intervention and control groups in goal attainment (regarding physical activity, productivity, social connection, and maintaining health) at 6 months. However, relative to the control group, the time spent walking increased, more primary care visits took place, and there were fewer hospital admissions in the intervention group. These results suggest that, by increasing primary care engagement, Health TAPESTRY may shift care from reactive to active preventive care in healthy older community-dwelling adults.¹⁹⁹</p>
<p>EMBOLDEN research program²⁰⁰ McMaster Institute for Research on Aging</p>	<p>The overall goal of the EMBOLDEN research program is to promote physical and community mobility of older adults who experience difficulties participating in community programs and reside in communities of high health inequity. Building on existing best practices and local evidence, researchers together with local older adults and community service providers will co-design an innovative community-based program to promote mobility among community-dwelling older adults. The experiences of older adults and community service providers are critical partners in this work.</p>

Name, origin, and/or funding	Description
	<p>Evaluation</p> <p>Following the co-design of the intervention, the study (a pragmatic mixed methods randomized controlled trial) will evaluate the implementation and effectiveness of the EMBOLDEN program. Evidence of feasibility, acceptability, and effectiveness of the program will provide a foundation to assess the potential to sustain the program and test it in other communities. The EMBOLDEN research program is an interdisciplinary research initiative of the McMaster Institute for Research on Aging and draws on the expertise of several faculties and academic units.</p>
Quebec	
<p>Agir pour mieux dormir²⁰¹</p> <p>Centre intégré universitaire de santé et de services sociaux de la Capitale-Nationale</p>	<p>A program that helps people over age 55 gradually reduce their sleeping pills and offers non-drug alternatives for insomnia. A pharmacist and nurse provide support through 5 group sessions to inform participants about sleep, insomnia, and the risks of using sleeping pills. Private meetings with a pharmacist are also possible. This program is offered free of charge at the local community service centre (centre de la Haute-Ville).</p>
Nova Scotia	
<p>Home Support Exercise Program²⁰²</p> <p>CCAA</p>	<p>An evidence-based program comprised of 10 progressive exercises designed to enable older adults to enhance and/or maintain their functional mobility and independence. Community Links (a province-wide organization supporting healthy aging) and its partner organizations promote the program in Nova Scotia. The exercises can be done in the home or a common room without the requirement for special equipment and are suitable for most levels of ability.</p>
<p>South Shore Helping Hands²⁰³</p> <p>Local health authority, Nova Scotia Department of Seniors, New Horizons for Seniors Program (Government of Canada), and Victorian Order of Nurses for Canada)</p>	<p>A community-based program that helps older adults stay in their homes and remain independent by providing assistance with tasks (including transportation to and from medical appointments or errands, minor home repairs, yard clean-up or shovelling, piling firewood) and companionship for older adults who live alone.</p>
<p>SMART²⁰⁴</p> <p>Victorian Order of Nurses for Canada</p>	<p>SMART are community-based, volunteer-led exercise programs for older adults that accommodate all levels of ability. SMART programs improve strength, balance, and cardiovascular health, and reduce social isolation and hospital visits relating to falls.</p>
New Brunswick	
<p>Zoomers on the Go program²⁰⁵</p> <p>University of New Brunswick</p>	<p>A peer-led exercise-based falls prevention program for older adults to help reduce mobility issues and social isolation in both urban and rural communities. The free 12-week exercise program aims to help adults over the age of 50 meet current physical activity guidelines by offering two 60-minute sessions per week involving aerobic and resistance exercises, as well as flexibility and balance activities.</p> <p>Evaluation</p> <p>Preliminary results indicate a 10% improvement in participants' strength and balance scores after 12 weeks in the Zoomers on the Go program.²⁰⁵ Researchers at the University of New Brunswick are partnering with Horizon Health Network and Fitness New Brunswick to recruit participants to investigate the potential physical, mental, and social benefits of the program.²⁰⁶</p>

Name, origin, and/or funding	Description
<p>Go Ahead Seniors Inc.²⁰⁷</p> <p>Funded by the Government of New Brunswick</p>	<p>A provincial organization that provides education sessions to adults over the age of 50. Included in these sessions is the Healthy Active Living program, a peer-led program that provides information on lifestyle choices. Central topics include understanding aging, healthy aging, physical activity, healthy eating, and falls prevention. These sessions are free of charge. The Healthy Active Living Program is partnering with different health professionals and organizations to bring the best and most accurate information to older adults across the province.</p>
<p>Seniors Navigator initiative (part of the Home First Strategy)²⁰⁸</p> <p>New Brunswick Department of Social Development</p>	<p>A voluntary, in-home consultation program designed to proactively address wellness, health, and social support to help create a safe and healthy home environment. The in-home visit, specifically targeting older adults aged 70 to 75, helps older adults and/or their caregivers in navigating the system to ensure they know where to access the services they may need now or in the future. The visits are conducted by trained workers to review personal wellness, health, social support, home safety, and caregiver support. This initiative includes up to \$1,500 in funding for minor, safety-related home repairs for those who cannot otherwise afford them.</p>
<p>Healthy Seniors Pilot Project²⁰⁹</p> <p>Government of New Brunswick</p>	<p>A \$75-million 3-year agreement between the Government of New Brunswick and the Public Health Agency of Canada, jointly led by the Government of New Brunswick's Department of Social Development and the Department of Health through the Seniors and Healthy Aging Secretariat. The project will support a range of applied research initiatives to examine how governments, in partnership with the community and private sectors, can better support older adults in their homes, communities, and care facilities. Findings will lay the groundwork for the dissemination of evidenced-based best practices in supporting healthy aging for all Canadians.</p>
<p>Prince Edward Island</p>	
<p>go!PEI Seniors campaign²¹⁰</p> <p>Prince Edward Island Department of Health and Wellness – Sports, Recreation and Physical Activity division</p>	<p>go!PEI is one of the pillars supporting older adults to increase physical activity. As part of the go!Seniors campaign, a partnership was developed with the Canadian Centre for Activity and Aging to increase the capacity of local older adult fitness instructors in the province. Local organizations are then provided with a subsidy to deliver low-impact physical activity programs to older adults living in their communities. Many of these programs are delivered in smaller rural communities that would not otherwise offer these types of programs.</p>
<p>Seniors Home Repair Program²¹¹</p> <p>Prince Edward Island Department of Family and Human Services</p>	<p>Provides financial assistance (covering up to 50% of costs to a maximum of \$2,000) for repairs such as roofs, windows, doors, or furnaces. This helps to minimize the risk of falling by ensuring home hazards can be repaired.</p>
<p>Seniors Safe @ Home Program²¹²</p> <p>Prince Edward Island Department of Family and Human Services</p>	<p>Provides financial assistance (between \$1,000 and \$5,000) to help older adults cover costs of improving accessibility in their home. Helps minimize risk of falling by providing financial support to assist in home modifications that make the home environment less hazardous and more supportive of current state of mobility.</p>
<p>Seniors Independence Initiative²¹³</p> <p>Prince Edward Island Department of Family and Human Services</p>	<p>Provides financial assistance for practical needs including housekeeping, home and property maintenance, meal preparation, and transportation, making it easier for older adults to remain in their homes longer.</p>

Name, origin, and/or funding	Description
Newfoundland and Labrador	
<p>Active for Life²¹⁴</p> <p>Recreation Newfoundland & Labrador and Memorial University's School of Human Kinetics and Recreation</p>	<p>A falls prevention program for older adults focusing on physical activity as a way to maintain or increase mobility, strengthen muscles, improve balance, and reduce the risk of falling among older adults. The program provides evidence-based mobility, strength, and balance exercise training to community practitioners interested in offering falls prevention programming in their local communities. The program consists of a warm-up, strengthening exercises, balance exercises, and an obstacle course that will test many different skills and abilities.</p>
<p>Falls Prevention Program²¹⁵</p> <p>Eastern Health</p>	<p>An initiative developed to assess and educate older adults at risk of falling. An assessment by an occupational therapist focuses on reducing falls by looking at the home environment and recommending changes to eliminate risk factors. Suggestions for modifications to daily activities to maximize safety and independence are also offered. A physiotherapist may provide exercises to improve strength and balance.</p>
<p>Senior's Exercise Class²¹⁶</p> <p>ActiveLife Physiotherapy and Wellness</p>	<p>A free 45-minute physiotherapist-led class offered twice a week for adults over the age of 50 that focuses on aerobic, strength, and balance exercises.</p>
<p>Accessible Taxi Program²¹⁷</p> <p>Newfoundland and Labrador Department of Children, Seniors and Social Development</p>	<p>Provides grants to individuals or businesses that can provide the appropriate vehicles and dispatch service to serve the needs of persons with mobility issues. This increases the capacity and ability of communities to provide accessible transportation for older adults to go to medical appointments, social events, fitness programs, grocery shopping, and other activities, which increases social participation and reduces the negative impacts of isolation.</p>
<p>Seniors' Social Inclusion Initiative²¹⁸</p> <p>Government of Newfoundland and Labrador</p>	<p>Provides grants for 50-plus clubs to support the delivery of programs or participation in community events that promote social inclusion, healthy aging, mental wellness, and overall well-being.</p>
<p>Home First initiative²¹⁹</p> <p>Newfoundland and Labrador Department of Health and Community Services</p> <p>Eastern Health, Central Health, Western Health, and Labrador-Grenfell Health</p>	<p>Enables older adults to stay in their homes as long as possible. A range of health care and support services is provided including access to home support, rehabilitation, nursing, counselling, medical equipment, and supplies. Older adults at risk of a fall receive a fall risk assessment and the necessary safety equipment is installed, such as railings and grab bars in their homes. This helps relieve any financial and social barriers to implementing assistive devices.</p>
<p>Provincial Home Repair Program²²⁰</p> <p>Newfoundland and Labrador Housing Corporation</p>	<p>Provides assistance to low-income older adults who require repairs to their homes and brings dwellings up to minimum fire and safety standards with improvements to heating, electrical, and plumbing services. This allows older adults to safely remain in their homes longer.</p>
<p>Medication Therapy Services Clinic²²¹</p> <p>Memorial University of Newfoundland School of Pharmacy</p>	<p>Pharmacists see patients by appointment to provide in-depth medication assessments, and work with patients, their doctors, and community pharmacists (and other health providers) to ensure they are taking the most appropriate medications and using them such that they are receiving the full benefit. Patients can be referred by their health provider or can call directly to book an appointment.</p>

Name, origin, and/or funding	Description
<p>SaferMedsNL²²²</p> <p>Government of Newfoundland and Labrador in partnership with the Memorial University of Newfoundland School of Pharmacy and the Canadian Deprescribing Network</p>	<p>A collaboration between patient advocates, community organizations, health care professionals, and academic researchers to improve medication use through deprescribing (or safely stopping) potentially harmful or unnecessary medications.</p>
<p>Community Healthy Living Fund²²³</p> <p>Government of Newfoundland and Labrador</p>	<p>A program that provides funding opportunities to communities and organizations for projects, programs, and initiatives that improve healthy living (such as increasing physical activity and vegetable and fruit consumption). Some of these funding opportunities are targeted at older adults (e.g., the Active Living for Older Adults Inc. Program).</p>
<p>Community Transportation Program²²⁴</p> <p>Government of Newfoundland and Labrador</p>	<p>A program that provides individuals living with mobility challenges or living in rural areas (including older adults) with transportation services.</p>

CCAA = Canadian Centre for Activity and Aging; LGBTQ = lesbian, gay, bisexual, transgender, and queer or questioning; SMART = Seniors Maintaining Active Roles Together; vs. = versus.

Table 7: Canadian Culturally Informed Healthy Aging Programs and Initiatives

Name and origin	Description
National	
<p>Indigenous seniors social isolation tool kit²²⁵</p> <p>Government of Canada</p>	<p>A tool kit focusing on Indigenous older adults produced by the Federal/ Provincial/Territorial Ministers Responsible for Seniors Forum. The tool kit presents tools to help individuals and organizations develop lasting community partnerships and programs to reduce the social isolation of Indigenous older adults.</p>
British Columbia	
<p>Coordination of 2 seniors' programs: Better at Home and the Farmers' Market Nutrition Coupon Program²⁰³</p> <p>North Cariboo Aboriginal Family Program Society and Canadian Diabetes Association Funded by the Government of British Columbia</p>	<p>The goal of the programs is to help make fresh, healthy food more accessible for lower-income Indigenous older adults living in a rural community who are also at risk of isolation. The North Cariboo Aboriginal Family Program Society coordinates the Better at Home program and the Farmers' Market Nutrition Coupon Program. Volunteer drivers pick up older adults (many of whom are low-income women) and drive them to the local farmers' market to spend the coupons on locally grown food. Volunteer drivers then take the older adults to a local community kitchen for the Food Skills for Families (Seniors in the Kitchen) program, a food literacy program implemented by the Canadian Diabetes Association with funding from British Columbia's Provincial Health Services Authority. There, older adults develop and share food preparation skills and socialize, and are often introduced to healthy foods that they might otherwise not have tried or known how to prepare. At the end of the session, the volunteer drivers take the older adults home with the food they have prepared. The program provides increased community engagement, social participation, and skills development for healthy nutrition.</p>
<p>Better at Home Aboriginal Engagement Strategy²²⁶</p> <p>United Way of the Lower Mainland</p>	<p>Better at Home strives to ensure services are available to a diverse range of older adults and Elders in British Columbia. Currently, the program serves Elders on reserve in the Cowichan Tribes, the Squamish Nation, the Tsleil-Waututh Nation, the Stó:lō Nation, and the Gitksan First Nation. The Better at Home Aboriginal Engagement Strategy will develop an approach for delivering non-medical home supports to First Nations Elders in a way that works best for their unique circumstances, and in their own communities.</p>
Alberta	
<p>Honoring the Bonds: Parenting Program²²⁷</p> <p>Aboriginal Friendship Centre of Calgary</p>	<p>An Elder-led program that gives families the opportunity to learn traditional teachings and parenting practices while integrating Western approaches to early childhood development. The program encourages nurturing relationships, development, and education.</p>
<p>Edmonton Indigenous Seniors Centre²²⁸</p> <p>City of Edmonton</p>	<p>A non-profit centre that strives to foster a sense of community among Indigenous older adults in Edmonton and offers tangible supports for their physical and mental needs through targeted programs. It offers drop-in programs, a housing registry, and programs in nutrition, foot care, computer literacy, and traditional arts.</p>
Northwest Territories	
<p>Centre for Aging + Brain Health Innovation projects¹¹⁹</p> <p>Baycrest, Toronto</p>	<p>A community-driven and Elder-led health and wellness program for Indigenous seniors in the Northwest Territories</p> <p>Host organization: University of Alberta, Edmonton, Alberta An Elder-led training program for caregivers and older adults to support positive health outcomes for Indigenous older adults. The program aims to enhance Indigenous older adults' and caregivers' knowledge regarding nutrition and physical activity, optimal use of services for managing chronic conditions, and resources to improve navigation of health care services.</p>

Name and origin	Description
Saskatchewan	
First Nations University of Canada, Elder Services ²²⁹	First Nations University of Canada offers students an opportunity to pursue post-secondary education in an environment that supports holistic learning. The Elders' offices work closely with the academic departments to provide students with an overview of First Nations customs, traditions, and teachings as they relate to the classes. The university also facilitates workshops and guest lectures on various topics such as the use of tobacco and sweat lodges.
Centre for Aging + Brain Health Innovation projects ¹¹⁹ Baycrest, Toronto	Community Greenhouse for Older Indigenous Adults: Supporting Cognitive Health Host organization: University of Saskatchewan, Saskatoon, Saskatchewan Guided by Elders and Knowledge Keepers, this project aims to build a community greenhouse and garden that will be used by residents to grow their own produce. The community greenhouse will have many benefits for participating older adults, including increased food security, learning and sharing of knowledge, engagement with nature, restorative health and well-being, and social inclusion.
Manitoba	
Winnipeg Aboriginal Senior Resource Centre ²³⁰ United Way, Volunteer Manitoba, and other fundraising organizations	A non-profit, charitable organization that uses a holistic approach to ensure the respect and well-being of Indigenous older adults in Winnipeg by: <ul style="list-style-type: none"> • increasing access to information, resources, and supports for Indigenous older adults • creating opportunities for active involvement within the community as a means of achieving physical, emotional, mental, and spiritual balance • providing opportunities for Indigenous older adults to pass on their traditional values and historical knowledge to younger generations • creating an environment where Indigenous older adults can celebrate their uniqueness and build strong community friendships.
Ontario	
Community Support Services ²³¹ Métis Nation of Ontario, Ontario Ministry of Health and Long-Term Care	The program offers an important cultural base and essential support to Métis older adults so they can stay in their homes as long as possible. The program has an estimated 14 regional sites, including in Ottawa, Thunder Bay, and Sudbury. A variety of services are offered including information, advocacy, and transportation for medical appointments. It coordinates with other community agencies to provide adult day programs, Meals on Wheels, friendly visits, and caregiver supports.
Tungasuvvingat Inuit ²³² Multiple government agencies (including Government of Ontario, Indigenous Services and Northern Affairs Canada)	Tungasuvvingat Inuit is a provincial, not-for-profit, Inuit-specific organization based in Ottawa offering more than 20 highly integrated, front-line services. For example, a health systems navigator helps northern Inuit who come to the south for medical care adjust to southern urban communities by providing culturally specific urban programs and services. Cultural education programs and other holistic, culturally responsive services offer Elders' teas, translation, monthly feasts, traditional games, counselling, housing, and other support services.

Name and origin	Description
Northwest Territories	
<p>Elders in Motion²³³</p> <p>A partnership program between the NWT Recreation and Parks Association, the Dene Nation, the CCAA with support from the NWT Seniors' Society and the Northwest Territories Department of Health and Social Services</p>	<p>The Elders in Motion Program aims to improve access to physical activity opportunities for NWT elders so that they can increase their independence and functional mobility. The program includes training and support for communities, groups, and individuals interested in developing and maintaining an elder recreation program. The program has specifically developed a series of training programs suitable for northern communities.</p>

Table 8: Canadian Technology-Based Healthy Aging Research Initiatives

Name, origin, and/or funding	Description
British Columbia	
<p>Technology for Injury Prevention in Seniors²³⁴</p> <p>Simon Fraser University, Burnaby Funded by AGE-WELL, Toronto, and the Canadian Institutes of Health Research, Ottawa</p>	<p>Technology for Injury Prevention in Seniors is a unique university-community partnership for developing new technologies to prevent falls and falls-related injuries in older adults. This partnership uses innovative approaches (such as video capture and wearable sensors) to determine the causes and circumstances of falls of older adults. Technology for Injury Prevention in Seniors also develops and tests the effectiveness of engineering interventions such as protective clothing and compliant flooring in reducing fall-related injuries.</p>
Manitoba	
<p>Brain fitness app²³⁵</p> <p>University of Manitoba, Winnipeg Funded by AGE-WELL, Toronto</p>	<p>An app being developed to maintain a healthy brain as well as detect the onset of memory and cognitive declines that lead to dementia. The app consists of a series of games or brain fitness exercises designed for the iPad. The exercises are designed to strengthen left-side brain connectivity and improve associative and spatial memory. A randomized controlled trial is being conducted in 60 healthy community-dwelling adults over the age of 65 to test the effect of the app on memory as well as the ability to detect the onset of cognitive decline.²³⁶</p>
Ontario	
<p>Centre for Aging + Brain Health Innovation projects¹¹⁹</p> <p>Baycrest, Toronto</p>	<p>This organization's programs provide funding to accelerate the evaluation and adoption of new health care innovations aimed at improving the quality of life of older adults. The following list provides examples of technologies that could potentially be used by healthy community-dwelling older adults that are currently being trialled in various seniors' settings.</p> <p>Motivational exercise and cognitive training using Motiview bike Hosts: Bruyère Research Institute and Bruyère Continuing Care, Baycrest Health Sciences (Reuben Cipin Healthy Living Community), West Park Healthcare Centre</p> <p>Motiview (from Motitech) uses an exercise bike, video, and sound to motivate older adults to increase their physical activity and cognitive training. The user can take a virtual bicycle trip through familiar surroundings and memories.</p> <p>Feasibility and usability of the WellAssist app for self-care and caregiving Host institution: Loch Lomond Villa, Saint John, New Brunswick Secondary institution: New Brunswick Institute for Research, Data and Training</p> <p>WellAssist (from Routinify) is an app that helps older adults to create and reinforce positive habits with the goal of improving wellness, safety, social and mental engagement, and security. Data can be collected from wearables, medical devices, and sensors to monitor activity and vitals throughout the day.</p>

Name, origin, and/or funding	Description
	<p>e.SPACE Host institution: RUIS McGill Centre of Excellence on Longevity, Montreal, Quebec</p> <p>e.SPACE is a new multimodal online solution that aims to promote brain health in older individuals through 5 non-pharmacological, evidence-based interventions. These cognitive and behavioural strategies focus on memory, sleep, mental health, nutrition, and communication, all of which will be developed and assessed through a participatory process involving feedback from older adults and web-based measurements.</p> <p>Hip-Hope Host institution: Baycrest Health Sciences, Toronto, Ontario</p> <p>Hip-Hope (from Hip-Hope Technologies Ltd.) is a device designed to be worn around the user's waist as a belt. Upon detection of an impending fall, the belt inflates to protect the wearer's hips. The current project evaluates the usability of the product with the older adult demographic.</p>
<p>Online Memory and Aging Program²³⁷</p> <p>Baycrest, Toronto, and Centre for Aging + Brain Health Innovation, Toronto</p>	<p>An evidence-based education and memory strategy training program for healthy older adults experiencing normal age-related memory changes. The sessions are geared to improve functioning during everyday tasks and inform participants on lifestyle factors that influence brain health. The Online Memory and Aging Program is not intended for individuals who have been diagnosed with mild cognitive impairment, Alzheimer disease, or any condition with a significant impact on memory. An ongoing randomized controlled trial is testing the effectiveness of the online program for memory-specific improvements in 200 participants over the age of 60.²³⁸</p>
<p>Proactive social robot (ElliQ)²³⁹</p> <p>Baycrest, Toronto, and Centre for Aging + Brain Health Innovation, Toronto</p>	<p>ElliQ (from Intuition Robotics) is a social robot that aims to reduce social isolation and loneliness among older adults by providing companionship, enrichment, and support. A randomized controlled trial of 100 participants over the age of 70 (including some who are community-dwelling) is being conducted to evaluate whether the robot has an impact on reducing social isolation and loneliness in older adults who are living alone, while promoting independence and aging in place.²⁴⁰</p>

e.SPACE = e-Suite for the Promotion of Healthy Aging in the Community.

Table 9: International Evidence-Based Healthy Aging Programs

Name and origin	Description	Evaluation
General healthy aging		
<p>Aging Mastery Program²⁴¹</p> <p>National Council on Aging (US)</p>	<p>A program offered in various community settings (including seniors' centres, community colleges, and community centres) consisting of 10 classes offered weekly to promote healthy aging by focusing on 10 central areas of aging:</p> <ul style="list-style-type: none"> • navigating longer lives • physical activity • sleep • healthy eating and hydration • financial security • medication management • advance care planning • healthy relationships • falls prevention • community engagement. <p>The sessions are facilitated by trained leaders and delivered by subject matter experts. The program incorporates evidence-based materials, expert speakers, group discussion, and peer support. The goal is the development of sustainable lifestyle behaviours across many dimensions that will lead to improved health, stronger financial security, overall well-being, and increased societal participation.</p>	<p>The program was tested in a crossover study of 284 participants aged 60 and above from 10 senior centres and aging network agencies. The effect of the program on general health and quality of life, self-management, physical activity, and advanced care planning was evaluated. There was a statistically significant ($P < 0.05$) improvement in physical activity and advanced care planning in program participants.²⁴²</p> <p>An ongoing RCT is evaluating the effectiveness of the Aging Mastery Program for improving the health and well-being in 200 adults aged 50 and above. Outcomes include improvements in health, well-being, and self-management after the 10-week intervention.²⁴³</p>
<p>Lifestyle Redesign²⁴⁴</p> <p>University of Southern California (US)</p>	<p>A group intervention designed to optimize the social participation of older adults living in the community and encourage the development of routines favouring the adoption of healthy lifestyles and involvement in meaningful activities. The intervention is facilitated by an occupational therapist and takes place over a period of 6 months to 9 months (26 to 39 weekly 2-hour meetings) and individual personalized meetings at home (5 to 10 1-hour meetings). These individual meetings aim to customize the information in a multicultural setting by identifying specific interests, promoting engagement in personally meaningful activities, and helping to achieve desired changes (personalized follow-up).</p>	<p>In a 6-month RCT of 460 ethnically diverse adults over the age of 60, the Lifestyle Redesign program administered in a variety of community-based sites showed favourable changes in indices of pain, vitality, social functioning, mental health, composite mental functioning, life satisfaction, and depressive symptoms ($P < 0.05$ for all outcomes) relative to participants not exposed to the program.²⁴⁵</p> <p>One study assessed the feasibility of Aging Well by Design (a shorter 12-week version of the Lifestyle Redesign program) delivered as a community outreach program for 13 adults over the age of 65. Results showed that participants expressed satisfaction with the program and perceived benefits in social relationships, awareness of community resources, and change in attitude toward aging.²⁴⁶</p>

Name and origin	Description	Evaluation
	<p>The basic elements of Lifestyle Redesign are:</p> <ul style="list-style-type: none"> • identification and application of realistic and long-term activity changes • development of plans to overcome obstacles (e.g., pain, transportation) • participation in specific activities involving the practice and repetition of changes in daily routine. 	<p>A cohort study of 16 community-dwelling French-Canadians showed that an adapted 6-month French version of Lifestyle Redesign had beneficial effects on participants' mental health, leisure activities, mobility, and social participation.²⁴⁷</p>
<p>SHAPE²⁴⁸ National University of Singapore (Singapore)</p>	<p>SHAPE is a 12-week community-based health and risk prevention program. The goal is to identify, equip, and strengthen resources for elderly-only households to help them age healthily in their own homes and to provide a platform to develop social connectedness with their peers. The program consists of:</p> <ul style="list-style-type: none"> • 2 home visits for risk prevention • 10 weekly group-based education sessions • a SHAPE health promotion booklet. 	<p>A 12-month RCT is currently evaluating the SHAPE program in 154 healthy community-dwelling adults over the age of 65 living alone or with other elderly people. Outcomes include changes in coping with stressors, quality of life, self-rated health, health-promoting behaviours, self-efficacy, independent living skills, functional mobility, blood pressure, fasting blood glucose, body mass index, cognitive function, depressive symptoms, anxiety, perceived stress, perceived social supports, and hospital admissions.^{248,249}</p>
Falls Prevention		
<p>LiFE²⁵⁰ University of Sydney (Australia)</p>	<p>LiFE is a tailored falls prevention program taught by an occupational therapist or physiotherapist over 5 home visits with 2 follow-up visits. It combines behaviour change techniques (e.g., planning, self-monitoring, habit formation) with movements prescribed to improve balance or increase strength. Participants are taught in one-on-one sessions to integrate increasingly challenging balance and strength challenges into daily everyday activities so that movements can be done multiple times a day.</p>	<p>A randomized parallel trial in 317 participants aged 70 or older who had 2 or more falls or 1 injurious fall in the past 12 months found a significant reduction of 31% in the rate of falls (IRR = 0.69; 95% CI, 0.48 to 0.99) at 12 months compared with a sham control program (comprising gentle exercise).²⁵¹ A proof-of-concept study evaluated the feasibility of an adapted LiFE (aLiFE) for preventing early functional decline in healthy younger individuals under the age of 70. Results showed that aLiFE has the potential to engage younger elderly adults in regular lifestyle-integrated activities.²⁵² The effectiveness of aLiFE and a version of the program delivered by smartphone application (eLiFE) are currently being evaluated in a RCT.²⁵³</p>
<p>EnhanceFitness²⁵⁴⁻²⁵⁷ University of Washington (US)</p>	<p>An evidence-based group falls prevention and physical activity program delivered by community-based organizations, including seniors' and community centres and YMCAs.</p> <p>Enhance fitness is taught 3 times a week in 1-hour sessions by certified instructors and includes exercises for:</p> <ul style="list-style-type: none"> • low-impact cardiovascular endurance • strength training • dynamic and static balance • posture • stretching. 	<p>One retrospective cohort study of 2,095 adults 65 years or older found that the EnhanceFitness program led to a reduction in falls requiring medical treatment over a 4-year period (HR = 0.74; 95% CI, 0.63 to 0.88).²⁵⁸</p> <p>One cohort study suggested that 4-month engagement in the program did not significantly reduce the number of falls (MSD = -1.24; P = 0.22).²⁵⁹</p>

Name and origin	Description	Evaluation
<p>A Matter of Balance^{260,261}</p> <p>Roybal Center at Boston University (US)</p>	<p>An 8-week structured group cognitive-behavioural intervention. The goal is to reduce fear of falling, stop the fear of falling cycle, and increase activity levels among community-dwelling older adults. Participants meet weekly or twice weekly for 2 hours per session. Meetings are led by volunteer lay leaders (coaches) after receiving instruction from a master trainer. The use of volunteer lay leaders enables embedding the program in community-based organizations, thus making it more broadly available to older adults in diverse settings. Practical strategies to reduce fear of falling and increase activity levels include:</p> <ul style="list-style-type: none"> • promoting a view of falls and fear of falling as controllable • setting realistic goals to increase activity • changing their environment to reduce fall risk factors • promoting exercise to increase strength and balance. 	<p>A cohort study of 355 participants assessed the impact of the community-based program delivered by volunteer lay leaders. Participants experienced significant increases in falls efficacy (confidence about performing everyday activities), falls management (confidence in managing falls by increasing physical strength, becoming more steady, and finding a way to get up if a fall occurred), and falls control (belief that falls can be prevented and that one can overcome a fear of falling) at 6 weeks, 6 months, and 12 months.²⁶²</p>
<p>Otago Exercise Program^{121,263}</p> <p>University of Otago (New Zealand)</p>	<p>The US version of the Otago Exercise Program can be delivered by a physical therapist, physical therapy assistant, or community-based organization in the home, outpatient, or community setting. The goal is to reduce the risk of falls in adults over the age of 65 who have a history of falls or who have been identified at an increased for falls.</p> <p>The progress of older adults is assessed over 8 weeks by the physical therapist and then the older adult is transitioned to a self-management phase for 4 months to 10 months. During this time, the older adult is supported by monthly phone calls and check-ins at 6 months and 12 months, if needed. There are opportunities for physical therapists to collaborate with community providers to support dissemination and implementation of the program. The program consists of:</p> <ul style="list-style-type: none"> • a series of warm-up exercises • participation in a minimum of 5 sessions over 8 weeks with a provider of the program • select exercises from the 17 exercises that challenge the participant’s strength and balance for up to 30 minutes, 3 times a week • a walking program for up to 30 minutes, 3 times a week. 	<p>Results from a meta-analysis found a reduction in the number of falls (IRR = 0.65; 95% CI, 0.57 to 0.75) and fall-related injuries (IRR = 0.65; 95% CI, 0.53 to 0.81).²⁶⁴ These results have been corroborated by a more recent meta-analysis that found fall rates decreased by 32% (RR = 0.68; 95% CI, 0.56 to 0.79).²⁶⁵ The risk of a serious or moderate injury as a result of a fall was not significantly different between the Otago exercise group and the control group (RR = 1.05; 95% CI, 0.91 to 1.22).</p> <p>Results from 1 systematic review showed that modified formats of the Otago Exercise Program (including additional vestibular or multi-sensory balance exercises, use of augmented reality, group exercise, and a DVD delivery format) all resulted in improvements in balance and functional ability but it remains unclear if any of the modified formats were as effective as the original program for preventing falls.²⁶⁶</p> <p>A 12-month RCT evaluated a home-based Otago Exercise Program in 344 community-dwelling adults aged 70 years or older who had had a fall within the past year were recruited from a fall prevention clinic in Vancouver. Results showed that the home-based program significantly reduced subsequent falls compared to usual care only (1.4 falls vs. 2.1 falls per person-year).²⁶⁷</p>

Name and origin	Description	Evaluation
<p>Stroll Safe Outdoor Fall Prevention Program²⁶⁸</p> <p>New York University (US)</p>	<p>A once weekly 7-week group-based educational intervention to decrease outdoor falls, including:</p> <ul style="list-style-type: none"> • didactic presentations • group discussions and problem-solving • practice in strategy use • action planning for safe community mobility. 	<p>Preliminary results from a feasibility study among 24 active community-dwelling older adults showed an increased use of prevention strategies and a decrease in trips, slips, and falls.²⁶⁸</p> <p>An ongoing RCT in 105 community-dwelling adults aged 60 years or older is evaluating the Stroll Safe Outdoor Fall Prevention Program compared to receiving written information alone. Outcomes include participant use of outdoor falls prevention strategies, awareness of and practice of behaviours to protect against falling, level of concern about falling, and use of fall diary reports.²⁶⁹</p>
Mental health		
<p>Healthy IDEAS^{270,271}</p> <p>Baylor College of Medicine's Huffington Center on Aging (US)</p>	<p>The Healthy IDEAS (Identifying Depression, Empowering Activities for Seniors) is a program designed to detect and manage depressive symptoms among older adults and their caregivers through existing community-based case management services. The goal is to reduce the severity of depressive symptoms in older clients (including individuals belonging to ethnic minorities or of lower socioeconomic status who are often overlooked and undertreated.)</p> <p>The program is delivered over 3 months to 6 months in a home or community setting by non-mental health professionals (such as case managers, social workers, and care coordinators). Healthy IDEAS engages local mental health experts (coaches) to provide back-up and support for staff.</p> <p>The program includes:</p> <ul style="list-style-type: none"> • screening and assessment • education for clients and family caregivers • referral and linkage between community aging service providers and health care professionals • behavioural activation (a brief, structured approach to help clients reduce depressive symptoms through increased involvement in meaningful activities). 	<p>One study evaluated Healthy IDEAS as delivered by case managers in 3 community-based service agencies to 94 older adults. Case managers were trained to provide screening and assessment, education, referral and linkage, and behavioural activation. At 6 months, significantly more participants knew how to get help for depression (93% vs. 68% at baseline) and reported that increasing activity helped them to feel better (89% vs. 72% at baseline). The authors concluded that non-specialty providers can be trained to successfully implement an evidence-based self-management intervention for depression with high-risk and diverse older adults.²⁷²</p>

Name and origin	Description	Evaluation
Medication review		
HomeMeds ^{273,274} Vanderbilt University School of Medicine (US)	A software program used by social workers and staff of aging service organizations to identify potential medication problems for their clients. During a home visit, staff document the client's history of falls, dizziness and confusion, vital signs and symptoms, and list of medications. This information allows a consultant pharmacist to review and resolve medication problems in collaboration with the prescriber, case manager, and the client and/or family.	Results from a RCT in 259 adults aged 65 years or older showed that HomeMeds was effective for reducing therapeutic duplication and the use of unnecessary cardiovascular medications. There were no significant improvements for the unnecessary use of psychotropic medications or NSAIDs. ²⁷⁵

CI = confidence interval; HR = hazard ratio; IRR = incidence rate ratio; LiFE = Lifestyle-integrated Functional Exercise; MSD = mean standard deviation; NSAID = nonsteroidal anti-inflammatory drug; RCT = randomized controlled trial; RR= risk ratio; SHAPE = Salutogenic Healthy Ageing Programme Embracement; vs. = versus.

Appendix 5: Additional Resources for Healthy Aging

Table 10: Canadian Self-Management Resources

Organization origin and/or funding	Description
General healthy aging	
AVOID Frailty²⁷⁶ Canadian Frailty Network	A website with extensive resources on how to avoid frailty using physical activity, vaccinations, medication review, social interaction, and diet.
Fountain of Health^{277,278} Funded by the Centre for Aging + Brain Health Innovation and Research Nova Scotia (formerly Nova Scotia Health Research Foundation)	A national initiative that offers evidence-based approaches to health behaviours. The free Wellness App can be used by older adults to set and meet small, doable goals in areas that can promote well-being and improve health. <i>Positive Aging: Healthy Living Handbook – Stay Healthy for Life!</i> supplements the Wellness App by helping older adults reflect on 5 key actions for a healthy life (staying socially active, changing how they think about aging, staying physically active, taking care of their mental health, and continuing to learn new things), set goals, and strive for a healthier life.
The Safe Living Guide—A Guide to Home Safety for Seniors²⁷⁹ Public Health Agency of Canada	<i>The Safe Living Guide—A Guide to Home Safety for Seniors</i> provides advice and help to older adults to maintain their independence in their homes as long as possible with information on home safety, nutrition, physical activity, medication safety, safety aids, and home modifications.
Go for it!²⁸⁰ Public Health Agency of Canada	<i>Go for it!</i> is a guide intended to help older adults choose and use assistive devices to aid in communication, cognition, personal care, personal mobility, housekeeping, home adaptation, and recreation.
The Self-Assessment Kiosk²⁸¹ Sinai Health System and University of Toronto	A user-friendly, flexible, anonymous resource that allows older adults to measure up to 18 domains of mental health and general health using validated questionnaires. At the end the session, feedback is given on their results and guidance is provided on how to interpret those results.
Nutrition	
Nutri-eSCREEN²⁸² University of Waterloo	Nutri-eSCREEN is an online tool designed to assess appetite, eating habits, and changes in weight in adults over the age of 50. A 14-question survey can help older adults decide where they need help to improve eating habits. Results from a feasibility analysis showed that Nutri-eSCREEN is a viable self-management tool for the identification of malnutrition in older adults. ²⁸³
Cognition	
Cogniciti²⁸⁴ Baycrest, Toronto	A free, private, and clinically researched online tool to help older adults evaluate and track their brain health. The Cogniciti Brain Health Assessment provides feedback and a recommendation about whether to talk to their doctor about memory concerns. If the score is below normal, a report is provided to take to their doctor. The Smart Tracker can be used to track overall health by monitoring diet, sleep, and exercise.
Words at Your Fingertips²⁸⁵ Centre for Aging + Brain Health Innovation	A website that contains evidence-based activities for improving word retrieval in healthy older adults, counteracting the effects of aging on word finding. The website provides basic facts about language changes in aging, a self-assessment, and exercises for retrieving words in various contexts.
Falls prevention	
Home Activity Program²⁸⁶ Vancouver Coastal Health	A web-based program consisting of print resource and videos designed for older adults in the community to improve balance and muscle strength, and to prevent falls. To assist people with different abilities, the program has 3 levels of activities. These include activities that may be done while sitting, standing, or moving. Resources are available in 4 languages: English, Chinese, Punjabi, and Farsi.

Organization origin and/or funding	Description
Fall prevention education series ²⁸⁷ Upper Grand Family Health and Victorian Order of Nurses for Canada	A YouTube playlist that provides presentations by allied health professions from the Upper Grand Family Health Team and Wellington County area in Ontario. The series consists of 12 videos of an hour in length each. It is intended for older adults and others with an interest in falls prevention.
What to do after a fall... (poster) ²⁸⁸ Public Health Agency of Canada	A poster providing guidance to older adults about what to do after a fall if they can get up, cannot get up, or are witness to the fall.
Maintaining Seniors' Independence Through Home Adaptations ²⁸⁹ Canada Mortgage and Housing Corporation	A self-assessment guide identifying the types of difficulties older adults can experience in the home and describing adaptations to overcome these difficulties. The guide helps older adults assess hazards within their homes, including stairs, moving around the house, doing laundry, and answering the door.
12 steps to stair safety at home ²⁹⁰ Public Health Agency of Canada	A list of tips to help older adults use stairs safely in their home.
You CAN prevent falls! ²⁹¹ Public Health Agency of Canada	A resource to help older adults prevent falls, including information on how to keep the home safe, how to stay healthy, how to use medications wisely, and how to use safety aids.
Social assistance	
Resources for seniors ¹⁶⁵ Government of Canada	A list of resources to help older adults age well in their community, including provincial and territorial social assistance resources and a benefits finder to assess eligibility for federal, provincial, or territorial government benefits.
Atlantic social policies for fall prevention ²⁹² Atlantic Collaborative on Injury Prevention	A report that includes an environmental scan of social policies in the Atlantic provinces that are directly or indirectly linked to falls prevention in older adults. Social policy examples are at the provincial government level and do not include municipal- or community-level policies that may also exist.
Culturally informed	
BC Elders' Guide ²⁹³ First Nations Health Authority and British Columbia Ministry of Health	A guide to help First Nations Elders, their families, and caregivers have access to information about programs, services, and resources to support their health and wellness as they age in the community.

Table 11: Miscellaneous Healthy Aging Interventions, Programs, and Initiatives^a

Organization origin and/or funding, or first author, publication year, and country	Description
Guidance resources	
<p><i>Health Aging in Place: An Overview of Healthy Aging Strategies in Rural and Urban Canada, 2018</i>²⁹⁴</p> <p>Saskatchewan Population Health and Evaluation Research Unit</p>	<p>A report providing an environment scan of healthy aging frameworks and strategies across Canada at the federal and provincial or territorial levels of government. The purpose of the report is to document the current landscape of healthy aging frameworks and strategies to provide a foundation for future planning to support older adults in rural communities and beyond.</p>
<p>Health Care Systems & Public Health: A workshop for the Global Roadmap for Healthy Longevity initiative²⁹⁵</p> <p>National Academy of Medicine, US</p>	<p>An international independent and multidisciplinary initiative to develop a global roadmap for healthy longevity that will identify, through evidence-based recommendations, the necessary priorities and directions for improving health, productivity, and quality of life worldwide. From the workshop discussions, an international commission will put forward actionable recommendations to spur innovation in healthy longevity, and guide other policy-makers, governmental and non-governmental organizations, the private sector, and stakeholders globally. Videos from the workshop are available.²⁹⁶</p>
Frailty screening	
<p>CARES^{14, 15}</p> <p>An interprovincial initiative between Fraser Health Authority, Nova Scotia Health Authority, and Shannex Inc. through the Canadian Foundation for Healthcare Improvement's EXTRA Executive Training Program.</p>	<p>Due to fragmentation of services in Canada, a disconnect has existed between pre-frail older adults and community care supports.²⁹⁷ CARES is an interprovincial initiative between the Fraser Health Authority and Nova Scotia Health Authority designed to connect older adults who are at risk of becoming frail with health care and community supports that they need. This will help keep these patients healthy for as long as possible within their community and decrease the impact of frailty on acute care and emergency resources. Using CARES, primary care physicians avail themselves of an evidence-based, comprehensive, geriatric assessment to identify older adults living at home or in assisted living who are at risk of becoming frail. The early identification of frailty gives health care providers an opportunity to intervene before the effects of frailty become too advanced to reverse. Using a phased approach, CARES combines regular assessments by primary care providers with wellness coaching from trained volunteers.</p>
Community and environmental design resources	
<p>Barnett, 2017²⁹⁸</p> <p>Australia</p>	<p>A systematic review on built environmental correlates of older adults' total physical activity and walking, including walkability, safety from crime, overall access to destinations and services, recreational facilities, parks and public open spaces, shops and commercial destinations, greenery and aesthetically pleasing scenery, and access to public transport.</p>
<p>Age-Friendly Communities Initiative²⁹⁹</p> <p>Public Health Agency of Canada</p>	<p>A report describing the Age-Friendly Communities Initiative and the use of age-friendly communities across Canada. To date, all 10 provinces are promoting age-friendly community initiatives in Canada.</p>

Organization origin and/or funding, or first author, publication year, and country	Description
<p>Transportation Options Network for Seniors³⁰⁰</p> <p>Sponsored by the New Horizons for Seniors Program, Manitoba Public Insurance, the Government of Manitoba, and The Winnipeg Foundation</p>	<p>Transportation Options Network for Seniors is a community-based resource organization that informs and educates Manitobans on the transportation options available to older adults and promotes age-friendly communities. This organization provides older adults with resources to keep driving safely, make the transition from driver to passenger, have options available when they are no longer able to drive, and have access to tutorials on how to take the bus.</p>
<p>INTERACT³⁰¹</p> <p>Collaboration of Simon Fraser University, Memorial University of Newfoundland, Canadian Institutes of Health Research, University of Saskatchewan, and Centre de Recherche du CHUM</p>	<p>A pan-Canadian collaboration of scientists, urban planners, and citizens uncovering the impact of urban changes on health and equity in order to create a sustainable and equitable environment for generations to come. INTERACT is currently available in Montreal, Vancouver, Victoria, and Saskatoon.</p>
<p>The Montreal Neighborhood Networks and Healthy Aging Panel³⁰²</p> <p>Queen's University</p>	<p>The Montreal Neighborhood Networks and Healthy Aging Panel is an observational study examining the relationship between neighbourhood environment, social capital, and health among older Montreal adults. Outcome measures include changes in obesity, depression, physical inactivity, hypertension, and subjective health.</p>
<p>Arbutus Greenway Evaluation³⁰³</p> <p>University of British Columbia and the Centre for Hip Health and Mobility</p>	<p>A multi-year (2017 to 2020) study to characterize the social and health impacts of the Arbutus Greenway Development being undertaken by the City of Vancouver (a 9 km multimodal active transportation corridor that will connect people, parks, and places from False Creek to the Fraser River). One of the study arms is evaluating adults above the age of 60 (both users and non-users of the Greenway) that live within 4 to 5 blocks of the Greenway. The study aims to learn if and how the Greenway affects peoples' health and social interactions.</p>
<p>Active Streets, Active People³⁰⁴</p> <p>University of British Columbia, the Centre for Hip Health and Mobility, and Simon Fraser University</p>	<p>A project being undertaken to evaluate the influence of social and built environments on the mobility of Vancouver residents. Older adults and older adults born outside of Canada are among the groups being evaluated.</p>
<p>Canadian Cohousing Network³⁰⁵</p> <p>British Columbia non-profit society</p>	<p>A registered non-profit organization that promotes the creation of cohousing communities as a model for sustainable development by raising public awareness about cohousing and bringing people together to form communities. Senior cohousing is a neighbourhood focused on aging well in the community. Residents design and manage senior cohousing themselves, relying on neighbourly mutual support (co-care) and a resident caregiver that they hire as needed. Communities are designed for physical accessibility as well as financial, environmental, and social sustainability. Large, shared common facilities and individually owned small dwellings preserve privacy while valuing community.</p>

Organization origin and/or funding, or first author, publication year, and country	Description
<p>Vertical Aging³⁰⁶</p> <p>University Health Network OpenLab, Toronto General Hospital</p>	<p>Seniors represent the fastest-growing segment of the population in metropolitan areas. This trend toward urbanization has given rise to the phenomena of vertical aging: seniors living in apartment, co-op, and condo buildings that were not originally built for older adults, but that have become home to naturally occurring retirement communities.</p> <p>Vertical Aging is a series of projects investigating the future of aging in place, where older adults live in mutually supportive high-rise communities. Through participatory design with older adults and demonstration projects, Vertical Aging will investigate the possibilities beyond the standard institutional options.</p>
<p>Pet ownership studies</p>	
<p>Gee, 2019³⁰⁷</p> <p>US</p>	<p>A systematic review and evaluation of existing research assessing the effects of pet ownership and animal interactions on physical health, exercise, depression, anxiety, loneliness, and social functioning among older adults.</p>
<p><i>Companion Animals and the Health of Older Persons Full Report</i>³⁰⁸</p> <p>International Federation on Ageing</p>	<p>A review synthesizing the wide body of literature investigating the impact of companion animals on older adults in terms of physical health, mental and/or psychological health, emotional health and well-being, social and community health, and economic health.</p>
<p>Obradović, 2019³⁰⁹</p> <p>Canada</p>	<p>A scoping review describing the pros (increased physical activity, well-being) and cons (grief, risk of falls) of pet ownership in community-dwelling older adults.</p>
<p>Foster Cat Research Study³¹⁰</p> <p>Augusta University and University of Georgia</p>	<p>A collaborative study to determine if having a pet improves the mental and emotional state of older adults living alone. The results of this study will help demonstrate that the human-animal bond can facilitate healthy aging through providing companionship, a greater sense of purpose in life, and emotional well-being.</p>

CARES = Community Action and Resources Empowering Seniors.

^a These interventions, programs, and initiatives are beyond CADTH's mandate and were considered beyond the scope of this scan.