Better with Age

Move more today for a healthier tomorrow

2019

ParticipACTION Report Card
on Physical Activity for Adults

PARTICIPACTION

2019 ParticipACTION Report Card on Physical Activity for Adults

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Centre for Active Living | Centre de vie active

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Institut canadien de la recherche sur la condition physique et le mode de vie

Active Aging Canada | Vieillir Activement Canada

Report Card Development Team

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Report Card Research Committee Chair
Nora Johnston

Research Manager
Dr. Soultana Macridis

Report Card Writers
Flip Livingstone
Antoine Tedesco

Project Management
Tala Chulak-Bozzer

Marketing & Communications
Rebecca Jones

Design & Production
Hambly & Woolley

Public Relations
Proof Inc.

Copy Editing
Ruth Hanley
Dr. Geneviève Leduc

Translation Services
Marie-Johanne Tousignant
Réseau Accès Participation

Better with Age

Move more today for a healthier tomorrow

Aging is a part of life: one that includes numerous memorable milestones and experiences, special moments with family, and opportunities to travel and learn new skills. But growing older can also bring about new challenges – increased prevalence of chronic diseases, memory loss, an increase in slips and falls and, in many cases, social isolation.

Luckily, there is something we can do every day to make it possible to feel strong, maintain mobility and stay independent throughout our lifetime and into our golden years. That "something" is physical activity.

Considering that **everything gets better when you get active** – from the ability to sleep better to heal better – physical activity is a critical factor in maintaining the physical, mental, social and economic wellness of our aging population, allowing adults living in Canada to age better and maintain a high quality of life.

Despite growing media attention and increased social awareness about the downsides of living an inactive life, few adults living in Canada are meeting national guidelines of 150 minutes of moderate-to-vigorous physical activity each week. In fact, only 16% of adults are active enough to reap the health benefits[1] associated with engaging in regular physical activity. With the proportion of older adults in Canada growing **faster than ever before,** the toll of **not** being active will be felt on our health-care system, our communities and on the economy more heavily than ever before.

This is our wakeup call, Canada! It's time to sit less and move more so we can help prevent the development of chronic diseases and live our best lives possible.

Inactivity costs us all. As of 2012, the estimated direct, indirect and total health-care costs of physical inactivity among adults living in Canada were $2.4 billion, $4.3 billion and $6.8 billion, respectively.[2] Conversely, economic analyses show that simply getting 10% of Canadians with suboptimal physical activity levels to move more would inject $1.6 billion back into our economy and decrease health-care spending by $2.6 billion by 2040.[3]

Age really is just a number

Did you know that for the first time in our nation's history, adults living in Canada over the age of 65 make up a larger percentage of our population than those aged 15 and under?

Simply put, **our population is aging.** The percentage of older adults is increasing at an accelerated rate never seen before. In fact, it's estimated that adults aged 65 years or older will represent between **23% and 25% of the population by 2036,**[4] increasing the prevalence of chronic health conditions such as diabetes, stroke and some cancers.

Stay mobile, independent and cognitively strong

Three of the biggest positive effects physical activity can have on Canadians' lives become extremely important as we enter our 60s, 70s and 80s: increased mobility, independence and cognitive wellness.

Falls, cognitive decline and social isolation are major challenges faced by some older adults. All of these challenges can have serious, debilitating impacts on how adults live their lives, so preventing or delaying their onset is key.

The best way to remain healthy, strong and independent is to get active. It can be as simple as walking a little bit each day – all movement counts. But with the proportion of adults meeting national physical activity guidelines continuing to drop,[5] we aren't setting ourselves up for success as we grow older. **So, what can we do?**

Stay on Your Feet

As we age, our bodies can experience natural changes that directly contribute to an increase in slips and falls.

Some of these changes include:

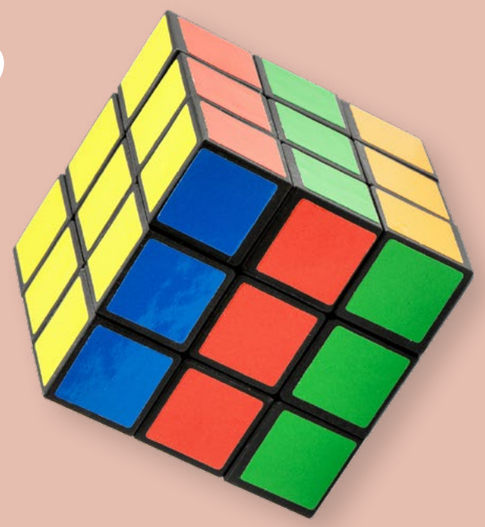
- Slowed reaction time
- Decreased muscle and bone strength
- Reduced balance

Falls remain the leading cause of injury-related hospitalizations among older adults living in Canada. Between **20% and 30% of older adults fall each year,**[6] so focus must be placed on the connection between physical activity and fall prevention.

Thankfully, engaging in activities such as strength training or taking a brisk walk are excellent ways to not only clock some of the recommended 150 minutes of moderate-to-vigorous physical activity per week, but also to **improve balance, core strength and stability – three absolute game-changers when it comes to preventing falls.**

In addition, when older adults who are physically active do experience a fall, they suffer fewer injuries than those who aren't physically active,[7,8] making recovery from a fall-related injury much shorter and reducing the risk of broken bones.[9]

Stay Cognitively Strong

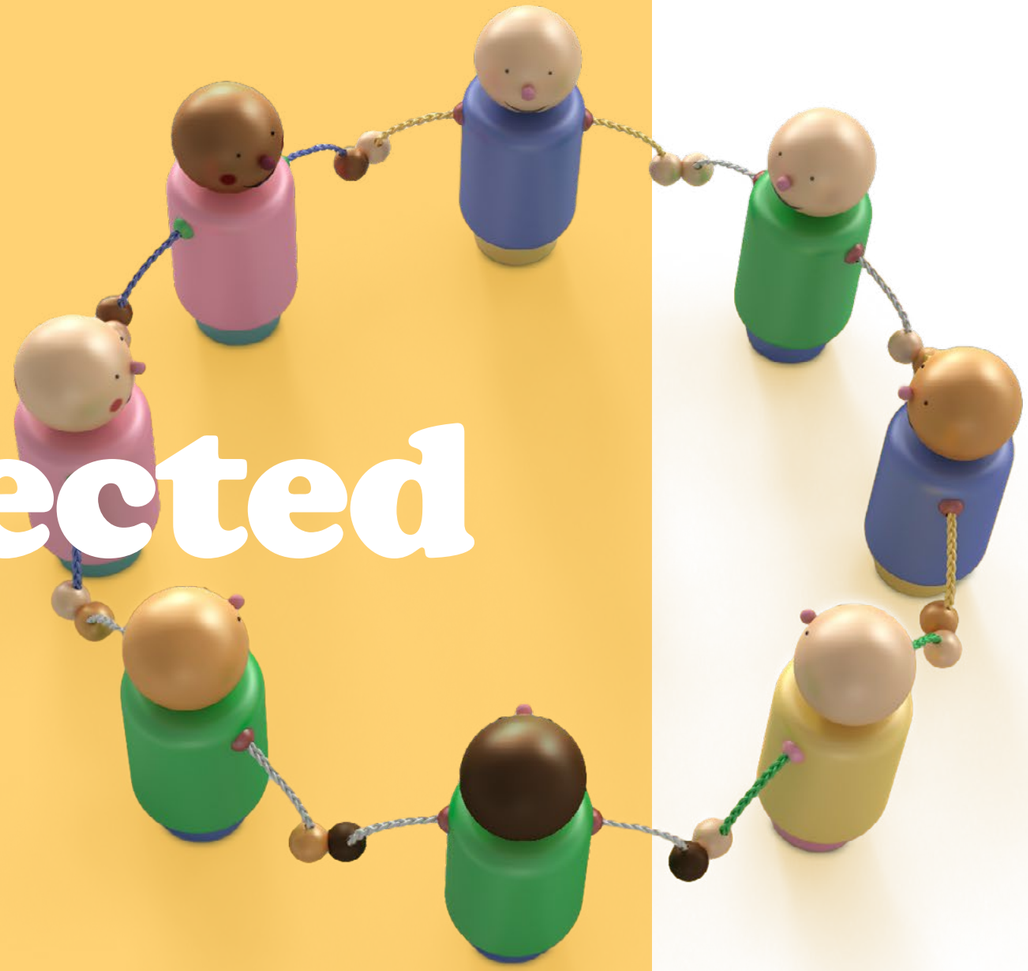


Unfortunately, because the primary risk factor for dementia is age, the number of Canadians living with a related brain disorder is expected to grow exponentially with Canada's aging population.

A recent report projects that **by 2031, close to 1.4 million adults living in Canada will be affected by dementia, resulting in direct health-care costs of approximately $16.6 billion.**[10] Considering the economic strain, along with the sheer volume of adults dealing with this debilitating disorder, the need for solutions is clear.

Enter physical activity! Research shows that being physically active protects against the onset of dementia and can slow its progression.[11,12] The **deterioration of the brain's pre-frontal cortex and hippocampus, which play critical roles in complex thinking and memory formation,** are usually associated with dementia. Luckily, these two areas are responsive to physical activity, allowing brain tissue to grow instead of break down – meaning we can extend our years of strong brain health by regularly stimulating our brains with physical activity.

Stay Connected



Research shows that 1 in 5 adults in Canada experience some level of loneliness or isolation.[13]

The most at risk? Older adults, due to a lack of mobility and shrinking social networks. But with physical activity as a tool, we can help fix this growing and concerning trend.

Think about it this way: older adults are proven to be at highest risk for broken bones and other fall-related injuries. Broken bones and injuries require time to heal and limit mobility. During recovery, decreased mobility can directly contribute to social isolation and, if severe enough, can reduce independence.

More specifically, social isolation can contribute to cognitive decline, depression and social anxiety, which can all lead to older adults becoming separated from society, friends and loved ones.

Fortunately, physical activity can help. Not only does it reduce the risk of falls and injuries in the first place, but it allows people to build social connections and enhance community engagement by providing opportunities to interact with others. In fact, the promotion of active aging is becoming increasingly important as a large proportion of Canada's population enters older adulthood.

Making time to get active each day – either with a single companion (like a neighbourhood walk-and-chat) or a group (like mall walking, lawn bowling or pickleball) – will benefit not just your body, but your mind and soul as well.

What can be done to ensure we all age better?

There's no getting around it, the inactivity crisis among adults living in Canada is a complex issue that requires a complex remedy. We need a comprehensive and coordinated solution that involves multiple partners and all orders of government. Aligning efforts and drawing on research to inform future policies and programming is a must.

Furthermore, additional research is required to help adults living in Canada live more active lives. From identifying barriers to creating more supportive environments to enhancing opportunities to get active, more detailed research can help promote sustained active living for all adults and help more Canadians live their best life possible.

Unfortunately, not nearly enough adults living in Canada are reaping all the benefits that living an active lifestyle has to offer. It begs the question, have we done everything we can as a country to ensure that everyone, regardless of age, can be physically active in their local surroundings? For example, are our communities and neighbourhoods age-friendly for walking? Are medical professionals equipped to discuss with their patients the importance of leading active lives? Are appropriate physical activity programs and trainers situated in all long-term living facilities?

Until some of these steps are taken and we start making physical activity a part of our everyday routines, not just as an afterthought but as a natural behaviour, we will continue to see more people suffering from the negative impacts of living inactive lifestyles.

Let's prepare for a quality future now and keep the meaningful memories coming for a long time. Make movement an important part of our everyday life and help retain our ability to drive a golf ball, run around with the grandkids or dance the nights away!

Being active isn't just a passing trend or fad – it's a scientifically proven method to strengthen our body, mind and social connections. Leading a physically active lifestyle will help prevent chronic disease, injury and the natural disconnect from society we can experience as we age.

Age is just a number

Indicators & Grades

Grades are common to every report card. The 2019 ParticipACTION Report Card on Physical Activity for Adults assigns letter grades to 13 different indicators grouped into 4 categories. Letter grades are based on an examination of current data for each indicator, where available, against a benchmark or optimal scenario. Together, the indicators provide a comprehensive assessment of how we are doing as a nation regarding the promotion and facilitation of physical activity among adults living in Canada.

Summary of the 2019 Adult Report Card indicators

Daily Behaviours

Overall Physical Activity
Daily Movement
Moderate-to-Vigorous Physical Activity
Muscle & Bone Strength
Balance
Sedentary Behaviours
Sleep

Individual Characteristics

Intentions

Settings & Sources of Influence

Social Support
Workplace
Community & Environment
Health & Primary Care Settings

Strategies & Investments

Government

Indicators & Grades

Approach to assigning letter grades in the Report Card

When assigning grades, the Report Card Research Committee (RCRC) considered multiple key findings that apply to adults of varying age groups. The RCRC considered key findings from 2 age groups: adults (18 to 64 years) and older adults (65 years and older). Each group represents a different proportion of the overall age range (18 years or older) included in the Report Card.

For each indicator, data were reviewed and discussed against a predefined benchmark or optimal scenario. More specifically, grades were based on the proportion of adults in Canada who were meeting the benchmark(s). Key considerations were factored into grading including, the quality of the compiled evidence and disparities across the lifespan (adults [18-64 years] and older adults [65 years and older]). A more detailed account of the development and grading process are published in the Supplementary Data document.

Grade assignments were determined based on examination of the current evidence, where available, against a benchmark or optimal scenario, assessing the indicator as outlined below:

A	B	C	D	F	Inc
A+ 94-100%	B+ 74-79%	C+ 54-59%	D+ 34-39%		A grade of INC indicates that there was insufficient data (or data of poor quality) to assign a letter grade.
A 87-93%	B 67-73%	C 47-53%	D 27-33%	F 0-19%	
A- 80-86%	B- 60-66%	C- 40-46%	D- 20-26%		

Disclosure

Developed by a team of Canadian researchers and stakeholders in the field of adult physical activity, recreation and sport, this report represents a targeted and purposeful synthesis of relevant literature and data sources. While in-depth literature searches and expert consultations were undertaken, systematic reviews and meta-analyses were not carried out. Data on national-level disparities were considered only for certain indicators, where available.

Daily Behaviours

These indicators speak to specific movement behaviours that occur over a 24-hour period.

Overall Physical Activity Grade

Importance of Physical Activity

The overall physical activity grade is based on a combination of 4 distinct indicators, which include:

- Daily movement
- Moderate-to-vigorous physical activity (MVPA)
- Muscle- and bone-strengthening activities
- Balance training activities

Based on Canadian Physical Activity Guidelines, it is recommended that adults (18-64 years old) and older adults (65 years or older) accumulate at least 150 minutes of MVPA per week – the type of activity that makes you breathe harder and your heart beat faster (e.g., brisk walking, cycling, wheeling, cross-country skiing, swimming).[1,2] It is also recommended to add muscle- and bone-strengthening activities (e.g., weight or resistance training) of major muscle groups at least 2 days per week.[14,15] Older adults with poor mobility should perform physical activities to enhance balance and prevent slips and falls.[14]

Daily Movement

Benchmark:

- % of adults 18 years or older living in Canada achieving ≥7,500 steps per day[16] in a variety of light, moderate and vigorous activities that contribute to daily movement.

Key Findings

Higher levels of physical activity (including light, moderate and vigorous intensity) have been linked to positive health outcomes and a reduced risk for premature death.[30]

On the basis of current objectively measured evidence, adults achieving ≥7,500 steps per day are considered to have a 'physically active lifestyle,' and those achieving 5,000 to 7,499 steps per day are considered to have a 'low active lifestyle'. [16]

Lifestyle & Daily Steps

52%

52% of adults 18 to 79 years living in Canada take at least 7,500 steps per day, which falls within the 'physically active lifestyle' category (Statistics Canada, 2016-2017 [Cycle 5], Canadian Health Measures Survey [CHMS]).[16] [custom tabulation]

29%

29% of adults 18 to 79 years living in Canada fall within the 'low active lifestyle' category (Statistics Canada, 2016-2017 [Cycle 5], CHMS).[16] [custom tabulation]

18%

18% of adults 18 to 79 years living in Canada achieve less than 5,000 steps per day, falling within the 'sedentary lifestyle' category (Statistics Canada, 2016-2017 [Cycle 5, CHMS]).[16] [custom tabulation]

- Walking is a simple and free physical activity that most adults of any age, culture or gender can enjoy. Walking and cycling are the most popular forms of active transportation and are often combined with other modes, notably public transit.
  - 22% of adults report using active transportation, such as walking or cycling to or from work or school (Statistics Canada, 2014, Canadian Community Health Survey [CCHS]):
    - 32% of 18- to 34-year-old adults
    - 18% of 35- to 49-year-old adults
    - 15% of 50- to 64-year-old adults
    - 12% of 65- to 79-year-old adults
- On average, adults report spending 1.9 hours per week using active ways, such as walking or cycling, to get to and from places (Statistics Canada, 2016, CCHS).[18]
- Adults report spending 3 hours a week doing physical activities while at work, in or around their home or while volunteering (CCHS, 2016).[18] These activities may fall across the spectrum of light, moderate and vigorous intensity.
- 26% of adults (18 years or older) reported participating in organized physical activity or sport, and 68% of adults engaged in some form of unorganized physical activity or sport in the past 12 months (Canadian Fitness and Lifestyle Research Institute [CFLRI], 2016-2018, Physical Activity Monitor [PAM]).[custom tabulation]
- Older adults can benefit from practising a more physically active lifestyle by increasing the number of steps they take per day.
  - A recent study of older women, with an average age of 72 years, found that an increased step volume (by approximately 4,400 steps/day), independent of intensity, was associated with a 41% reduction in mortality rate compared to a lower step volume (approximately 2,700 steps/day).[17] Mortality rate steadily declined as steps increased up until approximately 7,500 steps/day, after which the rates levelled off.[17]

Key Finding
Opportunities to engage in light, moderate and vigorous physical activity throughout the day can come in many forms, including work, active transportation, sport and recreation, and exercise.[17]

Recommendations/Gaps

Policy

1. Evidence supports that any movement throughout the day, regardless of intensity, is beneficial. Policies and health promotion campaigns should support people getting physical activity throughout the day in various settings including at home, in the workplace and in educational institutions.
2. Policies and practices in communities should support people in getting physically active. For example, communities should ensure that sidewalks are in good condition year-round to enable walking and wheeling in all seasons.
3. Policies and practices in communities should support people to move more. Walking is an easy way to increase steps.

Practice

1. Practitioners should develop strategies to increase daily step counts – especially for those individuals in the low active and sedentary lifestyle ranges.
2. Practitioners should develop programs and services that support lifelong engagement in physical activities, such as sport and recreational opportunities for all age groups.

Research

1. National data are needed to understand the physical activity levels of distinct population groups (e.g., individuals living with disabilities, individuals of low socioeconomic status, Indigenous peoples, newcomers to Canada and women who are pregnant).
2. More research is needed on the impact of different domains of physical activity on health (e.g., occupational vs leisure-time physical activity).
3. More research is needed to understand the physical activity habits of older adults, specifically those over the age of 79 years.
4. More research is needed to better understand the common characteristics of the low active population group to better support these individuals in moving more.

Moderate-to-Vigorous Physical Activity

Benchmark:

- % of adults 18 years or older living in Canada who meet the Canadian Physical Activity Guidelines (at least 150 minutes of weekly MVPA in bouts of 10 minutes or more).[14,15]

Key Findings

Based on objectively measured data, 16% of adults 18 to 79 years living in Canada achieve at least 150 minutes of weekly MVPA in bouts of 10 minutes or more:[19]

- 16% of 18- to 34-year-old adults
- 15% of 35- to 49-year-old adults
- 19% of 50- to 64-year-old adults
- 15% of 65- to 79-year-old adults

Recommendations/Gaps

Policy

1. New evidence supports that any movement during the day is good and incorporating shorter bouts of MVPA into one's day is beneficial (i.e., a few minutes at a time). This should be supported in workplaces, educational settings, leisure policies and health promotion campaigns.

Practice

1. Adults living in Canada should be moving more and sitting less. Doing more physical activity in the moderate- and vigorous-intensity zones is associated with greater fitness and health benefits.

Research

1. More data and research are needed to understand achievement of MVPA across various population groups (e.g., ages, genders, abilities, socioeconomic status and cultural diversity including Indigenous peoples and newcomers to Canada).
2. More national data are required to understand the MVPA habits of older adults, specifically of those over the age of 79.
3. More research is needed on how to support adults through the life-course in achieving minutes of MVPA.

Muscle & Bone Strength

Benchmark:

- % of adults 18 years or older living in Canada who achieve at least 2 days of muscle- and bone-strengthening activities.[14,15]

Key Findings

- The Canadian Physical Activity Guidelines recommend performing muscular activities at least twice weekly to increase muscle strength and endurance.[14,15] This type of physical activity uses resistance to induce muscular contractions, which build strength, endurance and size of skeletal muscles.
- This year's grade is an INC, as limited national data are available on adults 18 years or older to assess achieving the recommendation of performing physical activities to enhance muscle and bone strength.

Recommendations/Gaps

Policy

1. Nursing homes, long-term care facilities and extended living facilities should have policies to promote muscle- and bone-strengthening activities at least 2 days per week, to reduce the risk of residents' falls and to improve their independence.
2. Policies should be in place to support the use of qualified exercise professionals or the provision of training for staff in nursing homes, long-term care facilities and extended living facilities so they are able to offer and implement muscle- and bone-strengthening programs and activities.

Practice

1. Communities, as well as nursing homes, long-term care facilities, and extended living facilities, should promote and provide indoor and outdoor opportunities and practices that support engaging in at least 2 days per week muscle- and bone-strengthening activities, as a means to reduce the risk of falls and improve independence.
2. Practitioners should promote and build awareness about the importance for adults living in Canada to adopt muscle- and bone-strengthening activities as early as possible.
3. Programs, such as Bone Fit and GLA:D Canada, should be made more widely available and accessible as the cost recovery to deter health-care utilization is warranted.

Research

1. Additional national-level data are needed regarding the achievement of muscle- and bone-strengthening guidelines among adults.
2. More research is needed on how to reduce declines in muscle and bone strength that take place through the life-course.

INC

Balance

Benchmark:

- % of adults 65 years or older living in Canada who perform physical activities to enhance balance and prevent falls.[14]

Key Findings

- The Canadian Physical Activity Guidelines for Older Adults recommend that those with poor mobility should perform physical activities such as standing on 1 leg or practising tai chi to enhance balance and prevent falls.
- This year's grade is an INC, as limited national-level data are available on adults 65 years or older to assess achievement of the recommendation of performing physical activities to enhance balance and prevent falls.
- Exercise programs that combine both balance and strength activities are most effective to prevent falls among older adults living independently.[20]

Recommendations/Gaps

Policy

1. Fall prevention programs should be made more widely available and accessible, as they have been found to be cost-effective to the public.
2. Nursing homes, long-term care facilities and extended living facilities should have policies to promote balance activities, to reduce the risk of residents' falls and improve their independence.
3. Policies should be in place to support the use of qualified exercise professionals or the provision of training for staff in nursing homes, long-term care facilities and extended living facilities so they are able to offer and implement balance programs and activities.

Practice

1. Practitioners should promote and build awareness about the importance for adults living in Canada to adopt balance activities as early as possible.
2. Nursing homes, long-term care facilities and extended living facilities should implement practices that promote muscle-strengthening and balance activities at least 2 days per week, to reduce the risk of residents' falls and improve their independence.

Research

1. More research is needed to understand the balance activities that are available to support older adults in various settings.
2. National-level data are needed on achievement of the balance guidelines among older adults (65 years or older).
3. More research is needed on how to reduce declines in balance that take place through the life-course.

It's time to get moving

Sedentary Behaviours

Benchmark:

- Currently, there are no guideline recommendations in relation to sedentary behaviour for adults living in Canada.

Importance of reducing sedentary behaviours

Sedentary behaviour is typically defined as any waking activity that uses very little energy while the person is sitting or in a reclined position.[21,22]

The risks of a sedentary lifestyle among older adults are similar as those of young adults. However, there are additional conditions that are more relevant to older adults, including physical and cognitive impairments, frailty, social isolation, poor mental health, incontinence, disablement and problems with sleep. Although not disease-specific, these conditions can impact overall quality of life.[25]

Risks of Sedentary Behaviour

In contrast to the many health benefits achieved through a physically active lifestyle, being sedentary for extended periods of time (e.g., sitting while watching television or using a computer) can increase the risk of[23,24]:

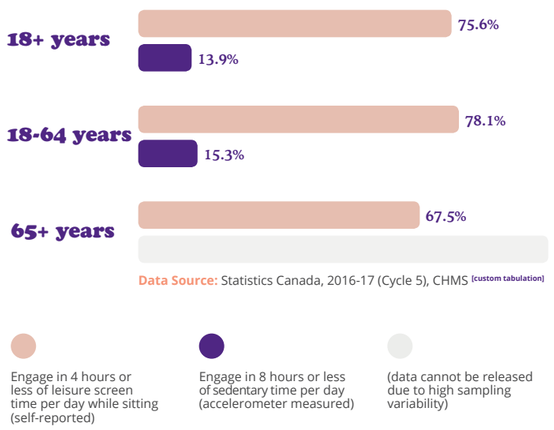
- Cardiovascular diseases
- Type 2 diabetes
- Obesity
- Some cancers
- Pulmonary disease
- All-cause mortality

Key Findings

Currently, there are no sedentary behaviour guidelines for adults or older adults living in Canada, resulting in an INC grade. However, at this time, we know that:

- Adults 18 to 79 years living in Canada are sedentary for 9.6 hours per day, excluding sleep time (Statistics Canada, 2014-15 [cycle 4], CHMS)[18]:
  - 18- to 34-year-old adults: 9.5 hours per day
  - 35- to 49-year-old adults: 9.4 hours per day
  - 50- to 64-year-old adults: 9.8 hours per day
  - 65- to 79-year-old adults: 10.1 hours per day
- In an average week, adults 18 to 79 years spend 25 hours on a computer or tablet to watch videos, play computer games, send emails or surf the internet, while in a seated or reclined position (Statistics Canada, 2014-15, [cycle 4], CHMS):[26]
  - On an average day, adults spend 3.6 hours in a seated or reclined position in front of a screen (Statistics Canada, 2014-15, [cycle 4], CHMS)[18]:
    - 18- to 34-year-old adults: 4.0 hours per day
    - 35- to 49-year-old adults: 3.0 hours per day
    - 50- to 64-year-old adults: 3.4 hours per day
    - 65- to 79-year-old adults: 4.0 hours per day
- Approximately 86% of adults 18 to 79 years or older are sedentary for more than 8 hours per day (excluding sleep time).

Engagement in Daily Sedentary Behaviours



Data Source: Statistics Canada, 2016-17 (Cycle 5), CHMS [custom tabulation]

Engage in 4 hours or less of leisure screen time per day while sitting (self-reported)

Engage in 8 hours or less of sedentary time per day (accelerometer measured)

(data cannot be released due to high sampling variability)

Recommendations/Gaps

Policy

1. Policy-makers should develop sedentary behaviour guidelines to support adults and older adults living in Canada.
2. Policy-makers should develop educational campaigns about the risks of prolonged sitting which are distinct from those of physical inactivity.
3. Workplaces should create a culture of movement by adopting policies that allow employees regular breaks or alternatives to sitting (e.g., variable standing desks, support for active meetings, prompts to break up sitting time more often) to reduce sedentary time at work; management should lead by example.

Practice

1. Health-care providers should promote reduced sitting time and encourage able-bodied individuals to consider how they can reduce sitting.
2. Families should make a Family Media Use Plan that includes individualized time and content limits for the family.
3. Practitioners should encourage individuals to stand and take a break from sitting (e.g., at their computer, while watching television, standing during meetings) every 30 minutes.

Research

1. More evidence is required on unhealthy or 'danger' thresholds for prolonged sitting.
2. Future research should focus on developing interventions to reduce sedentary behaviour in a variety of settings among adults and older adults (e.g., home, work, school, outdoors).
3. More research is required on the potential of behavioural compensation (e.g., reduction of physical activity across the day) resulting from getting people to reduce their engagement in sedentary behaviour.

Sleep

Benchmark:

- % of adults living in Canada who meet the sleep duration recommendations[27]:
  - 7 to 9 hours daily for adults 18 to 64 years
  - 7 to 8 hours daily for adults 65 years or older

Importance of sleep

Sleep behaviour is recognized as an important determinant of overall health and well-being across the life-course.[26-29] The US-based National Sleep Foundation recommends that adults 18 to 64 years should sleep for 7 to 9 hours per night, and adults 65 years or older should sleep for 7 to 8 hours per night.[27]

Being physically active can support improvements in sleep.

Key Findings

- 65% of adults 18 to 79 years living in Canada meet sleep duration recommendations (Statistics Canada, 2009-11 to 2014-15 [cycle 2-4], CHMS)[29]:
  - 18- to 34-year-olds: 67% meet sleep recommendations
  - 35- to 49-year-olds: 66% meet sleep recommendations
  - 50- to 64-year-olds: 66% meet sleep recommendations
  - 65- to 79-year-olds: 54% meet sleep recommendations
- On average, adults achieve 7.2 hours of sleep per day[30]:
  - 18- to 64-year-olds: 7.1 hours of sleep per night
  - 65- to 79-year-olds: 7.2 hours of sleep per night
- Sleep quality:
  - 43% of men and 55% of women (18-64 years) report having trouble going to sleep or staying asleep "sometimes/most of the time/all of the time".[30]
  - Among older adults (65-79 years), women (59%) are more likely than men (40%) to report having trouble going to sleep or staying asleep "sometimes/most of the time/all of the time".[30]

Recommendations/Gaps

Policy

1. Companies should be encouraged to use self-luminous display screens, which block the blue light of screens.
2. Workplace policies should promote flexible work schedules for employees that promote healthy sleep practices.

Practice

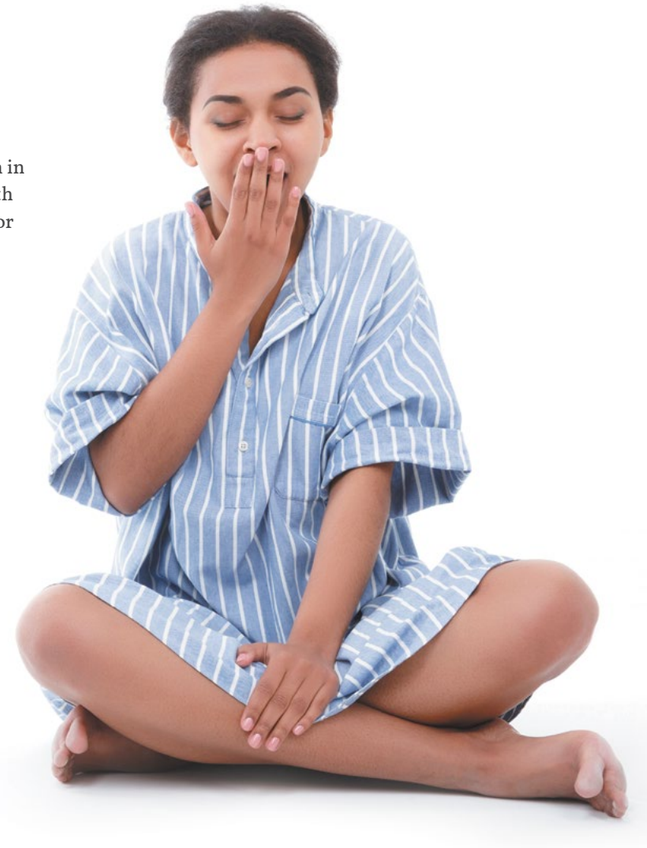
1. Given the evidence for the effects of poor sleep on health and chronic disease, health-care providers should assess patients' sleep health, including sleep duration, sleep quality, sleep timing, daytime alertness and the presence/absence of sleep disorders.
2. Practitioners should encourage individuals to avoid screens at least 1 hour before bedtime, and discourage recreational screen use in the bedroom to maintain healthy sleep habits.

Research

1. Future research should continue to develop and update evidence-informed sleep guidelines for different target groups (e.g., new parents, shift workers).
2. There is a need for improved monitoring of sleep health in Canada, including assessing sleep health objectively with actigraphy, and updating and refining sleep questions for use in national health surveys.

Recommendation

Follow sleep hygiene recommendations to maintain a healthy sleep, including removing screens from the bedroom; reducing screen time exposure during the day; increasing physical activity level throughout the day; making sure the bedroom is dark, quiet, comfortable and cool; reducing caffeine consumption later in the day; and, having a relaxing bedtime routine.



It's time to take action

Individual Characteristics

This indicator speaks to personal features or characteristics that contribute to physical activity levels.

Intentions

Benchmark:

- % of adults living in Canada intending to be physically active in the next 6 months.

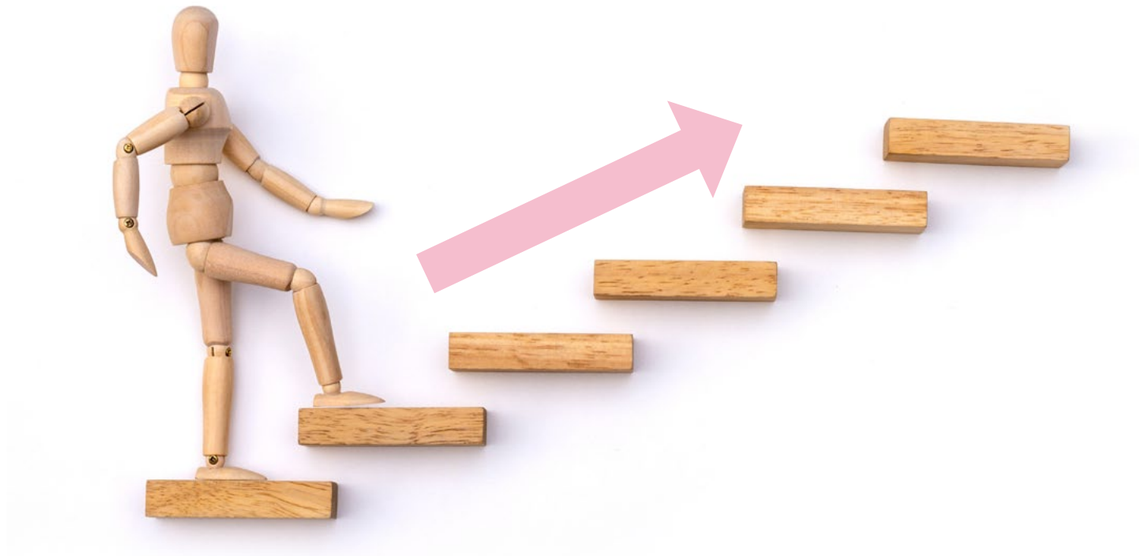
Importance of intentions & physical activity

Intention, or the willingness to invest effort in a particular behaviour, is considered to be an important link between cognition and behaviour.[31,32] The relationship between intention and behaviour specifically has shown a positive link between intention and physical activity behaviour.[33-36]

Key Findings

74% of adults living in Canada indicate that they have strong intentions to be physically active within the next 6 months (CFLRI, 2014-2015, PAM).[custom tabulation]

- 75% of adults 18 to 64 years old and 68% of adults 65 years and older report strong intentions to be active.
- Adults 18 to 24 years report stronger intentions to be active compared to adults 45 years and older.
- Adults 25 to 44 years report stronger intentions to be active compared to adults 65 years and older.



Steps to Behaviour Change

Awareness and Exposure	Knowledge and Understanding	Beliefs and Attitudes	Self-Efficacy and Control	Intention	Behaviour Trialling
50% of adults are aware of any adult PA guidelines; 37% have heard of Canada's PA guidelines. Highest recall of PA guidelines among 18-to-24-year-olds.	62% of adults have knowledge of the amount of recommended PA required per week. More adults 65+ years have knowledge of the amount of PA required per week compared to 45-to-64-year-olds.	Adults 'very strongly agree' that PA prevents heart disease (84%) and helps with activities of daily living (77%) and stress management (72%); 58% of adults say PA is very important. More older adults 65+ years say PA is 'very important', but less older adults than younger adults <65, agree on the importance of PA to prevent heart disease, improve stress management and help with activities of daily living.	78% of adults are at least 'moderately confident' they can be active even when busy or do not feel like it; 63% have considerable control fitting PA into their lifestyle. More adults 65+ years are at least 'moderately confident' they can be active when busy compared to 25-to-64-year-olds.	54% of adults fully intend to be active in the next 6 months. Adults 65+ years have lower intentions to be active compared to 25-to-44-year-olds.	41% of adults have attended a class or tried some kind of PA in the past year; 63% have made active choices in their usual work routine (e.g., taking the stairs) to be more active. Greater proportion of adults under 45 years old are likely to take a step toward being active, such as trying a class or making active choices at work; fewer adults 65+ years are likely to do this.

Source: CFLRI, 2014-2015, PAM [custom tabulation]
CPAG: Canadian Physical Activity Guidelines
PA: physical activity

Recommendations/Gaps

Policy

1. Policy-makers should encourage, facilitate and reward environments that encourage adults living in Canada to translate positive intentions into structured and unstructured physical activity throughout the course of the day.
2. Policy-makers should facilitate the development of comprehensive community-wide plans (Official Community Plans) that work across settings to encourage movement throughout the day – plans that are inclusive, and also put special emphasis on the low active population (those achieving 5,000 to 7,499 steps per day).

Practice

1. Practitioners should support adults and older adults develop plans for dealing with daily barriers to physical activity.
2. Practitioners should work with stakeholders across sectors to create supportive environments that encourage the active choice.

Research

1. Continue to understand the factors that contribute to intention formation and the successful translation of intentions into physical activity.
2. Build effective interventions to both form and sustain positive physical activity intentions.
3. Develop tools to measure levels of motivation and physical literacy in adults and older adults, and monitor levels through national population surveys.

Importance of Physical Literacy

Physical literacy is defined as "the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits throughout the life-course".[37]

It has been widely suggested that physical literacy may positively influence an individual's physical activity and sedentary behaviours.[38,39] Conversely, it has been suggested that those who struggle with their physical literacy may be less likely to participate in physical activities, putting themselves at greater risk of negative health effects.[40]

Physical literacy has been identified as a key foundational principle informing the areas of focus in "A Common Vision for Increasing Physical Activity and Reducing Sedentary Living in Canada."[41]

Physical literacy in adults has received relatively little attention in research.[42] Some of the available evidence highlights a positive link between physical activity and specific areas of physical literacy (i.e., knowledge, confidence, motivation, physical competence).[43-45]

Settings & Sources of Influence

These indicators speak to the various environments (physical and social) that impact physical activity levels.

Social Support

Benchmark:

- % of adults living in Canada who receive social support to be physically active from key individuals (family, peers, other key individuals) and the community.

Importance of family & peer support

In order to achieve behaviour change of whole populations, physical inactivity needs to be de-normalized and physical activity needs to be re-normalized; this can be accomplished by changing norms and beliefs and by providing direct support for modifying environments and policies to encourage physical activity.[46-47]

Key Findings

- This year's grade is an INC, as limited national-level data are available to provide a full understanding of the social support that individuals receive from family, peers or other key individuals to be physically active.
- 53% of adults 18 years or older living in Canada agree "to some extent" that most of their family members walk for at least 30 minutes on almost every day).[custom tabulation]
- 37% of adults 18 years or older living in Canada agree "to some extent" that most of their friends walk for at least 30 minutes on almost every day (CFLRI, 2014-2015, PAM). [custom tabulation]
- Adults also indicate various barriers to being physically active, including (CFLRI, 2016-2018, PAM)[custom tabulation].

Barriers to Physical Activity

	Adults 18 to 64 years old	Adults 65 years or older
Difficulties finding others to be active with (33%)	33%	33%
Difficulties finding the necessary support services (27%)	26%	31%*
Difficulties finding family-oriented physical activity programs/classes (25%)	25%	22%
Difficulties finding the right coaching/instruction (22%)	21%	25%

*Significant difference between age groups

Recommendations/Gaps

Policy

1. Policy-makers should create policies that support greater opportunities for intergenerational physical activity programming.
2. Policy-makers should continue to invest in upgrading and expanding infrastructure that encourages walking.
3. Policy-makers should continue to invest in recreation facility revitalization and park spaces to support community participation in physical activity.

Practice

1. Practitioners should develop community-wide media campaigns that reframe the salient social norms around physical activity into campaign messages.
2. Practitioners should develop and mobilize community walking groups.

Research

1. Research is needed to understand age-specific strategies that enhance supportive relationships through both family and peer networks across the life-course.

Workplace

Benchmark:

- % of workplaces that provide opportunities for employees to be more physically active and less sedentary throughout the workday.
- This is provided through awareness and education opportunities as well as social and organizational supports via leadership capacity and infrastructure, community assets and partnerships, and policies and programs.

Importance of supporting physical activity & reducing sedentary behaviour in the workplace

Considering the amount of time individuals spend at work, the workplace is an ideal setting to support opportunities to be more physically active and less sedentary throughout the day. This is especially important for those in office-based settings, where most of the day is spent sitting.

There are many ways in which workplaces can support increases in physical activity and reductions in sedentary behaviours throughout the workday. These benefits can span across the health and social well-being of employees, the image of the workplace and economic aspects of the workplace.[48-54]

Key Findings

- This year's grade is an INC, as the most recent national data based on the workplace were collected in 2007-08, and this was deemed outdated to be useful in grading the current workplace context.
- Overall, employers observe the following benefits for their organizations as a result of supporting opportunities to be active at the workplace (CFLRI, 2007-2008, Workplace Survey)[custom tabulation]:
  - Increased productivity (93%)
  - Reduced health-care costs/insurance premiums (91%)
  - Reduced absenteeism (86%)
  - Reduced workers compensation claims as a benefit of physical activity programs (74%)
  - Reduced number of accidents (70%)

Recommendations/Gaps

Policy

1. Workplaces should create policies to increase employees' physical activity and reduce sedentary behaviours (e.g., providing bike racks or lock-ups, or standing workstations).
2. Governments should explore opportunities to support medium- and smaller-size companies in their implementation of policies, practices and programs that support increasing physical activity and reducing sedentary behaviours in the workplace.
3. As part of successful business practice, all workplaces should conduct a physical activity and sedentary behaviour workplace audit.

Practice

1. All workplaces should have strategies and/or programs to increase employee physical activity and reduce sedentary behaviour through support of active transportation, walking meetings/breaks, access to physical activity facilities, and active workplace challenges.
2. Regardless of the type of program, all workplace interventions should be inclusive and accessible to all employees.

Research

1. New workplace data are needed to provide up-to-date information on the current status of physical activity and sedentary behaviour opportunities in workplaces across Canada.

Supportive Workplaces

There are different ways workplaces can support employees to be physically active throughout the workday. These include[55]:

- Employee awareness and education
- Social support
- Organizational support
- Community assets and partnerships
- Programs and policies

Community & Environment

Benchmark:

- % of communities that are aware of and use physical activity guidelines and information.
- % of communities that have a formal strategy for physical activity.
- % of communities that have formal active transportation plans.
- % of communities providing supports for active transportation.
- % of communities indicating partnerships/collaborations for delivering physical activity/sport programming.
- % of communities providing safe and appropriate facilities for physical activity and sport.
- % of communities providing programming to support various populations.

Importance of community & environment on physical activity

The relationship between the environment (both built and natural) and physical activity has been linked to better health, such as lower body mass index and body fat; fewer cardiovascular disease risk factors; lower risk for cancer; lower risk for premature death from all causes; better mental health; and a stronger sense of community belonging.[56-65]

Active transportation is defined as any form of human-powered travel (e.g., walking, cycling, non-mechanized wheel chairing, public transit) that individuals can use on their j ourney from place to place.[66] Developing and incorporating active transportation plans, or incorporating active transportation within formal community plans, can help promote both utilitarian (destination-oriented) and recreational (leisure-oriented) physical activity.[67] Increased levels of active transportation have been linked to[68-80]:

- Convenient public transit stops
- A choice of destinations within a reasonable distance
- Well-maintained sidewalks
- Dedicated areas for cycling (e.g., safe cycling routes, few hills, good connections between roads and routes, and paths that are accessible to and from various destinations)
- Affordable recreation facilities
- Safe traffic

Key Findings

Supports & information

- Communities use various forms of physical activity resources for information, which include (CFLRI, 2015, Survey of Communities)[custom tabulation]:
  - National guidelines (55%)
  - Provincial/territorial guidelines (39%)
  - Physical literacy strategies (28%)
- In terms of partnership supports, communities work with other organizations when developing physical activity and sport facilities, programs and services (CFLRI, 2015, Survey of Communities)[custom tabulation]:
  - Not-for-profit organizations (94% of communities)
  - Schools/boards (86%)
  - Provincial/territorial government/agencies (75%)
  - Business/private sector (71%)
  - Local public health (67%)
  - Local planning (61%)
  - Provincial sport organizations (61%)
  - Federal government/national agencies (35%)
  - Local transportation departments (32%)

Policies, strategies & plans

- 35% of communities have indicated that they have a formal strategy to support physical activity and sport (CFLRI, 2015, Survey of Communities).[custom tabulation]
- 22% have a formal active transportation plan (CFLRI, 2015, Survey of Communities).[custom tabulation]

Facilities

The top-listed sport and recreation facility types cited among Canadian communities include (CFLRI, 2015, Survey of Communities)[custom tabulation]:

- **Parks and green spaces (93% of communities)**
- **Baseball and softball diamonds (90% of communities)**
- **Ice rinks (88% of communities)**
- **Soccer or football fields (84% of communities)**
- **Community centres, halls, shared facilities (81% of communities)**
- **Tennis or racquetball courts (79% of communities)**
- **Basketball courts (73% of communities)**
- **Playing and climbing structures (73% of communities)**
- **Arenas (67% of communities)**
- **Gyms (65% of communities)**

Recommendations/Gaps

Policy

1. Communities should ensure that Official Community Plans integrate inclusive (all ages, abilities and cultures) physical activity through multifaceted approaches across community settings.
2. Communities should ensure dedicated funding is available to facility and infrastructure repair/maintenance.
3. Communities and organizations should promote and implement sharing agreements between community organizations (especially in rural communities).
4. Urban planners and city developers should consider the effects of urban sprawl on public health and on opportunities for the greater population to be physically active.
5. Communities should enhance community infrastructure for active transportation.

Practice

1. Practitioners across multiple disciplines should develop multi-sectoral collaborations in which public health professionals, urban planners, traffic engineers, architects and policy makers at all levels work together.
2. Practitioners should adopt community-based participatory approaches to planning, especially with Indigenous communities, to support and incorporate historical and local practices and needs of the population.

Research

1. More national-level data are needed on how communities are/are not meeting needs of Indigenous community members.
2. More national-level data are needed on the availability of physical activity programming in rural, remote and reserve communities.
3. More national-level data are needed on older adult usage patterns of community physical activity spaces.

Health & Primary Care Settings

Benchmark:

- % of adults living in Canada who receive support to be physically active from a health professional.

Importance of health-care professionals & settings

The health-care setting is an opportune avenue for the promotion of physical activity to adults living in Canada. Physicians and other health-care providers are well-respected in providing health advice and have regular contact with their patients. Research has shown that physicians who provide advice or counselling about physical activity can result in positive effects.[81]

Key Findings

- 40% of adults have heard about physical activity from a health professional in the past 12 months (CFLRI, 2014-2015, sub-sample of PAM). [custom tabulation]
  - Higher percentage of adults 65 years or older (52%) have heard about physical activity from a health professional in the past 12 months compared to 25- to 44-year-olds (34%).
- 23% of adults indicate that they have sought advice from a health-care professional about becoming more active, within the past year (CFLRI, 2014-15, PAM).[custom tabulation]

Recommendations/Gaps

Policy

1. Given that a lack of knowledge and confidence is a primary barrier reported by many health-care providers, content about physical activity must be required in medical and allied health professional medical curriculums.
2. Health-care billing and administrative policies should help make physical activity counselling and exercise prescription the 'easier choice' to promote healthy behaviours.
3. Further efforts should be made to 'bridge the gap' between health-care and community recreation, with greater promotion of cross-disciplinary programming (e.g., cardiac rehabilitation and cancer exercise programming that can run in community recreation and fitness facilities).

Practice

1. Physicians and other health-care providers should seek out continuing medical education opportunities to enhance their knowledge and confidence for physical activity counselling and exercise prescription.
2. Physical activity counselling should be considered by physicians and other health-care providers as a good investment of time and energy in their patients' health.

Research

1. Update national evaluation of physical activity prescription practices by physicians and other health-care providers.
2. Enhance ability to evaluate and track physical activity prescriptions in practice (e.g., through electronic medical records and billing).

Sit less, move more together

Strategies & Investments

This indicator speaks to how various governmental activities impact physical activity levels of individuals and populations.

Government

Benchmark:

- Evidence exists of leadership and commitment in promoting physical activity opportunities for adults of all ages and abilities.
- Funds and resources are allocated for the implementation of physical activity promotion strategies and initiatives for adults of all ages, abilities and cultures.

Key Findings

Policy

- On May 2018, the federal government released A Common Vision for Increasing Physical Activity and Reducing Sedentary Living in Canada: Let's Get Moving,[41] a national policy document intended to guide the country toward ways of increasing physical activity and reducing sedentary living. The first initiative developed by the federal government in Canada, it focuses on factors that influence physical activity and its relationship to sport, recreation, health and other relevant policy areas.

Leadership

- Canada is committed to the WHO Global Action Plan for Physical Activity (2018-2030).
- Canada has evidence-based physical activity guidelines for:
  - Adults (18 to 64 years old)[14]
  - Older adults (65 years or older)[15]
  - Pregnancy[82]
  - Multiple sclerosis[83]
  - Spinal cord injury[84]
  - Parkinson's disease[85]
  - Hypertension[86]
- The Government of Canada recently passed The Accessible Canada Act. This Act aims to ensure a barrier-free Canada, which will benefit individuals living with disabilities.[87]
- The federal government aims to amend the Physical Activity and Sport Act to support reconciliation by ensuring that policies to promote physical activity as a fundamental element of health and well-being are inclusive of Indigenous peoples.

Funding

- The 2019 federal budget proposes that $30 million be provided over 5 years to enable sport organizations in Canada to promote accessible, ethical, equitable and safe sports for families, athletes and coaches.[88]
- $3 million in funding over 4 years is being provided to the Canadian Association for the Advancement of Women and Sport and Physical Activity (CAAWS) to support its efforts to increase participation of women and girls in sport.[88]
- The 2018 federal budget highlighted the government's commitment to improving the country's physical activity levels by pledging to invest $5 million per year for 5 consecutive years (totalling $25 million) to ParticipACTION.[89]
- The 2018 federal budget proposed $16 million over 5 years with $2 million per year ongoing, for Special Olympics Canada.[89]
- In 2018, the federal government proposed investing $47.5 million over 5 years, and $9.5 million per year ongoing to expand the use of sport for social development in more than 300 Indigenous communities.[89]

Recommendations/Gaps

Policy

1. Dedicated funding is required for the implementation, monitoring and evaluation of the Common Vision. There must be clearer delineation of roles and accountability among stakeholders.
2. Governments at all levels should seek to understand and intentionally address the issues faced by people with the greatest need and access issues, by targeting policies to eliminate disparities in physical activity participation levels.
3. All provinces/territories should have clear and concise policies to support the implementation and evaluation of the Common Vision.

Practice

1. Practitioners should continue to advocate for greater and sustained funding for physical activity initiatives.
2. Government should provide leadership development, training and community capacity building for those living in rural or remote communities, for new adults living in Canada, and for marginalized populations.
3. Communities should ensure that all members of society have access to facilities and programs across their life-course, rather than focusing solely on children and youth.
4. Communities should invest in active transportation infrastructure.
5. Practitioners should deliver physical activity, sport and recreation programming in concert with provincial/territorial strategies.

Research

1. Appropriate physical activity and sport surveillance monitoring systems must be maintained.
2. Implementation plans at the provincial/territorial and federal levels should have clear and well-resourced evaluation plans that can gauge whether initiatives are meeting intended goals.

Abbreviations

CFLRI
Canadian Fitness and Lifestyle Research Institute

CCHS
Canadian Community Health Survey

CHMS
Canadian Health Measures Survey

FPT
Federal, provincial and territorial

INC
Incomplete

ISRC
Interprovincial Sport and Recreation Council

METS
metabolic equivalents

MVPA
Moderate-to-vigorous physical activity

PAM
Physical Activity Monitor

PHAC
Public Health Agency of Canada

RCRC
Report Card Research Committee

SBRN
Sedentary Behaviour Research Network

WHO
World Health Organization

Major Data Sources

The following are major data sources used in the 2019 Report Card:

Canadian Community Health Survey (CCHS; bit.ly/2FVlVDs)

Formed in 1991, the CCHS is a cross-sectional survey that collects information related to health status, health care utilization and health determinants for the Canadian population every 2 years. The main objectives of this survey include: supporting health surveillance programs by providing health data at the national, provincial and intra-provincial levels; providing a single data source for health research on small populations and rare characteristics; and, creating a flexible survey instrument that includes a rapid response option to address emerging issues related to the health of the population.

Canadian Health Measures Survey (CHMS; goo.gl/dnZ41C)

The CHMS, launched in 2007, is collecting key information relevant to the health of Canadians by means of direct physical measurements such as blood pressure, height, weight and physical fitness. As part of the CHMS, a clinical oral health examination helps to evaluate the association of oral health with major health concerns such as diabetes, and respiratory and cardiovascular diseases. In addition, the survey is collecting blood and urine samples to test for chronic and infectious diseases, as well as nutrition and environment markers. Through household interviews, the CHMS is gathering information related to nutrition, smoking habits, alcohol use, medical history, current health status, sexual behaviour, lifestyle and physical activity, the environment and housing characteristics, as well as demographic and socio-economic variables.

General Social Survey (GSS; bit.ly/35swPwu)

The GSS is a series of annual, cross-sectional surveys gathering data on social trends to monitor changes in the living conditions and well-being of Canadians ages 15 years or older, and to provide information on specific social policy issues.

Physical Activity Monitor (PAM; www.cflri.ca)

The PAM is an annual telephone survey of nationally representative population samples which tracks physical activity and sport participation among Canadians and tracks changes in physical activity patterns over time, along with factors influencing participation. The surveys representativeness of various specific populations (for example by gender groups, age groups, geographic, and socio-economic groups) are strengths of the surveys. The surveys are cross-sectional in nature, so the data are applicable to surveillance and hypothesis generating purposes, but are not applicable for assessing cause and effect.

Municipalities (www.cflri.ca)

The Municipalities survey collects community based data on municipal policies, infrastructure, services supporting physical activity, municipal programming and schedules, barriers and requirements, and availability of physical activity information.

Workplace (www.cflri.ca)

The Workplace survey collects data on supportive workplace policies, availability of facilities at work or near work to be active, work related benefits and barriers to physical activity, demand for resources, and encouragement for physical activity.

References

1. Clarke J, Colley R, Janssen I, Tremblay MS. Accelerometer-measured moderate-to-vigorous physical activity of Canadian adults, 2007 to 2017. *Health Rep*. 2019;30(8):3-10.
2. Janssen, I. Health care costs of physical inactivity in Canadian adults. *Appl Physiol Nutr Metab*. 2012;37(4):803-806.
3. Bounajm F, Dinh T, Theriault. Moving Ahead: The Economic Impact of Reducing Physical Inactivity and Sedentary Behaviour. 2004. https://www.conferenceboard.ca/e-library/abstract.aspx?did=6436. Accessed July 12, 2019.
4. Statistics Canada. *Population projections for Canada, provinces and territories*. 2015. https://www150.statcan.gc.ca/n1/pub/91-520-x/2010001/after-toc-aprestdm1-eng.htm. Accessed July 15, 2019.
5. Statistics Canada. *Tracking physical activity levels of Canadians, 2016-2017*. 2019. https://www150.statcan.gc.ca/n1/daily-quotidien/190417/dq190417g-eng.htm. Accessed August 21, 2019.
6. Public Health Agency of Canada. *Seniors' falls in Canada: Second report*. 2014. http://www.phac-aspc.gc.ca/seniors-aines/publications/public/injury-bles-sure/seniors_falls-chutes_aines/assets/pdf/seniors_falls-chutes_aines-eng.pdf. Accessed April 15, 2019.
7. Franco MR, Pereira LS, Ferreira PH. Exercise interventions for preventing falls in older people living in the community. Br J Sports Med. 2014;48:867–868. doi: 10.1136/bjsports-2012-092065.
8. Scott V, Wagar L, Elliott S. *Falls and related injuries among older Canadians: Fall-related hospitalizations & intervention initiatives*. Victoria, BC; 2010. http://www.hiphealth.ca/media/research_cemfia_phac_epi_and_inventor_20100610.pdf. Accessed October 9, 2018.
9. Ireland A, Maden-Wilkinson T, Ganse B, Degens H, Rittweger J. Effects of age and starting age upon side asymmetry in the arms of veteran tennis players: a cross-sectional study. *Osteoporos Int*. 2014;25:1389–1400.
10. Alzheimer Society Canada. *Latest information and statistics*. 2018. https://alzheimer.ca/en/Home/Get-involved/Advocacy/Latest-info-stats, Accessed July 11, 2019.
11. Rabin JS, Klen H, Kirn DR, Schultz HS, et al. Associations of physical activity and β-amyloid with longitudinal cognition and neurodegeneration in clinically normal older adults. *JAMA Neurology*. 2019.
12. Martin Ginnis KA, Heisz J, Spence JC, Clark IB. Formulation of evidence-based messages to promote the use of physical activity to prevent and manage Alzheimer's disease. 2017. *BMC Public Health*;17:209.
13. Statistics Canada. *Living alone in Canada*. https://www150.statcan.gc.ca/n1/en/pub/75-006-x/2019001/article/00003-eng.pdf?st=QMBFr0a3.2019. Accessed Aust 3, 2019.
14. Canadian Society for Exercise Physiology. Canadian Physical Activity Guidelines for Adults 65+ Years 2011; https://csepguidelines.ca/adults-65/. Accessed April 12, 2019.
15. Canadian Society for Exercise Physiology. Canadian Physical Activity Guidelines for Adults 18 to 64 Years 2011; https://csepguidelines.ca/adults-18-64/. Accessed April 12, 2019.
16. Tudor-Locke C, Craig CL, Thyfault JP, Spence JC. A step-defined sedentary lifestyle index: <5000 steps/day. *Appl Physiol Nutr Metab*. 2013;38(2):100-114.
17. Centre for Active Living. Physical Activity. 2017; https://www.centre-4activeliving.ca/media/filer_public/a4/ff/a4fffcee-b984-44a6-9188-47b96a6179f0/2017-daily-physical-activity-infographic-lettersz.pdf.. Accessed August 12, 2019.
18. Centre for Surveillance and Applied Research. *Physical activity, sedentary behaviour and sleep (PASS) Indicators data tool*. 2018.https://health-infobase.canada.ca/pass/data-tool?index=1036. Accessed August 15, 2019.
19. Clarke J, Colley R, Jannssen I, Tremblay MS. *Accelerometer-measured moderate-to-vigorous physical activity of Canadian adults, 2007 to 2017*. Ottawa, ON 2019. 82-003-X201900800001.
20. Gillespie LD, Robertson MC, Gillespie WJ, Sherrington C, Gates S, Clemson LM, Lamb SE. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev*. 2012;9.
21. Pate RR, O'Neill JR, Lobelo F. The evolving definition of "sedentary". *Exerc Sport Sci Rev*. 2008;36(4):173-178.
22. Sedentary Behaviour Research Network. Letter to the editor: Standardized use of the terms "sedentary" and "sedentary behaviours". *Appl Physiol Nutr Metab*. 2012;37(3):540-542.
23. Biswas A, Oh PI, Faulkner GE, et al. Sedentary time and its association with risk for disease incidence, mortality, and hospitalization in adults: A systematic review and meta-analysis. *Ann Intern Med*. 2015;162(2):123-132.
24. O'Donoghue G, Perchoux C, Mensah K, et al. A systematic review of correlates of sedentary behaviour in adults aged 18-65 years: A socio-ecological approach. *BMC Public Health*. 2016;16:163.
25. de Rezende LFM, Rey-López JP, Matsudo VKR, do Carmo Luiz O. Sedentary behavior and health outcomes among older adults: a systematic review. *BMC Public Health*. 2014;14(1):333.
26. Centre for Surveillance and Applied Research, Public Health Agency of Canada. *Canadian chronic disease indicators*. 2018; https://health-infobase.canada.ca/ccdi/. Accessed April 10, 2019.
27. Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's updated sleep duration recommendations: final report. *Sleep Health*. 2015;1(4):233-243.
28. Canadian Sleep Society. *Normal sleep: Patient information brochure*. 2018; https://css-scs.ca/resources/brochures/normal-sleep. Accessed September 19, 2018.
29. Office of Disease Prevention and Health Promotion. *Sleep health*. 2017; https://www.healthypeople.gov/2020/topics-objectives/topic/sleep-health. Accessed September 19, 2018.
30. Chaput JP, Wong, S.L., Michaud, I. Duration and quality of sleep among Canadians aged 18 to 79. *Health Reports*. 2017;28:28-33.
31. Ajzen I. Perceived behavioral control, self-efficacy, locus of control, and the Theory of Planned Behavior. *J Appl Soc Psychol*. 2002;32(4):665-683.
32. Rhodes RE, Rebar AL. Conceptualizing and Defining the Intention Construct for Future Physical Activity Research. *Exerc Sport Sci Rev*. 2017;45(4):209-216.
33. Amireault S, Godin G, Vézina-Im L-A. Determinants of physical activity maintenance: A systematic review and meta-analyses. *Health Psychol Rev* 2013;7(1):55-91.
34. Rhodes RE, Quinlan A. Predictors of physical activity change among adults using observational designs. *Sports Med*. 2015;45(3):423-441.
35. Choi J, Lee M, Lee J-k, Kang D, Choi J-Y. Correlates associated with participation in physical activity among adults: A systematic review of reviews and update. *BMC Public Health*. 2017;17(1):356.
36. Rhodes RE, Lubans DR, Karunamuni N, Kennedy S, Plotnikoff R. Factors associated with participation in resistance training: A systematic review. *Br J Sports Med*. 2017;51(20):1466-1472.
37. Tremblay MS, Costas-Bradstreet C, Barnes JD, et al. Canada's Physical Literacy Consensus Statement: process and outcome. *BMC Public Health*. 2018;18(2):1034.
38. Edwards LC, Bryant AS, Keegan RJ, Morgan K, Cooper S-M, Jones AM. 'Measuring' physical literacy and related constructs: A systematic review of empirical findings. *Sports Med*. 2018;48(3):659-682.
39. Cairney J, Dudley D, Kwan M, Bulten R, Kriellaars D. Physical literacy, physical activity and health: Toward an evidence-informed conceptual model. *Sports Med*. 2019;49(3):371-383.
40. Longmuir PE, Boyer C, Lloyd M, et al. The Canadian Assessment of Physical Literacy: Methods for children in grades 4 to 6 (8 to 12 years). *BMC Public Health*. 2015;15:767-767.
41. Public Healthy Agency of Canada. *Let's Get Moving: A Common Vision for Increasing Physical Activity and Reducing Sedentary Living in Canada*. Ottawa;2018.
42. Edwards LC, Bryant AS, Keegan RJ, Morgan K, Jones AM. Definitions, foundations and associations of physical literacy: A systematic review. *Sports Med*. 2017;47(1):113-126.
43. Rhodes RE, Janssen I, Bredin SSD, Warburton DER, Bauman A. Physical activity: Health impact, prevalence, correlates and interventions. *Psychol Health*. 2017;32(8):942-975.
44. Jones GR, Stathokostas L, Young BW, et al. Development of a physical literacy model for older adults: A consensus process by the collaborative working group on physical literacy for older Canadians. *BMC Geriatr*. 2018;18(1):13.
45. Dale LP, LeBlanc AG, Orr K, et al. Canadian physical activity guidelines for adults: Are Canadians aware? *Appl Physiol Nutr Me*. 2016;41(9):1008-1011.
46. Yun L, Vanderloo L, Berry TR, et al. Assessing the social climate of physical (in)activity in Canada. *BMC Public Health*. 2018;18(1):1301.
47. Sallis JF, Owen N, Fisher E. Ecological models of health behavior. *Health behavior: Theory, research, and practice*. 2015;5(43-64).
48. Greef M, Broek K. *Making the case for workplace health promotion analysis of the effects of workplace health promotion. Belgium: European Network for Workplace for Health Promotion*. 2004.
49. Kreis J, Bödeker W. *Health-related and economic benefits of workplace health promotion and prevention: Summary of the scientific evidence*. BKK Bundesverband; 2004.
50. O'Donnell MP. *Health promotion in the workplace*. Cengage Learning; 2001.
51. Peersman G, Harden A, Oliver S. *Effectiveness of health promotion interventions in the workplace: A review*. Health Education Authority London; 1998.
52. World Health Organization. *Workplace health promotion*. 2017; http://www.who.int/occupational_health/topics/workplace/en/. Accessed December 21, 2017.
53. Muylaert K, Op De Beeck R, Van den Broek K. *Company Health Check: An instrument to promote health at the workplace*. 2007.
54. Hassard J, Teoh K, Cox T, et al. *Calculating the cost of work-related stress and psychosocial risks*. Luxembourg, 2014;. ISSN: 1831-9351.
55. Alberta Health Services, Centre for Active Living. *Active Workplace Audit Toolkit*. Edmonton, AB. 2019.
56. Berry TR, Spence JC, Blanchard C, Cutumisu, N, Edwards, J., Nykiforuk, C. Changes in BMI over 6 years: The role of demographic and neighborhood characteristics. *Int J Obes*. 2010;34(8):1275-1283.
57. Berry TR, Spence, JC, Blanchard CM, Cutumisu, N, Edwards J, Selfridge GA. Longitudinal and cross-sectional examination of the relationship between reasons for choosing a neighbourhood, physical activity and body mass index. *IJBNPA*. 2010;7(1):57.
58. Ferdinand AO, Sen B, Rahurkar S, Engler S, Menachemi N. The relationship between built environments and physical activity: A systematic review. *Am J Public Health*. 2012;102(10):e7-e13.
59. Durand CP, Andalib M, Dunton GF, Wolch J, Pentz MA. A systematic review of built environment factors related to physical activity and obesity risk: Implications for smart growth urban planning. *Obes Rev*. 2011;12(5):e173-e182.
60. Malambo P, Kengne AP, De Villiers A, Lambert EV, Puoane T. Built environment, selected risk factors and major cardiovascular disease outcomes: A systematic review. *PloS One, 11(11), e0166846*. 2016;11(11):e0166846.
61. Sugiyama T, Koohsari MJ, Mavoa S, Owen N. Activity-friendly built environment attributes and adult adiposity. *Curr Obes Rep*. 2014;3(2):183-198.
62. Loo CJ, Greiver M, Aliarzadeh B, Lewis D. Association between neighbourhood walkability and metabolic risk factors influenced by physical activity: A cross-sectional study of adults in Toronto, Canada. *BMJ Open*. 2017;7(4):e013889.
63. Booth GL. *Built environment and health*. Canada Communicable Disease Report. 2016;42(10).
64. Colley RC, Christidis T, Michaud I, Tjepkema M, Ross NA. An examination of the associations between walkable neighbourhoods and obesity and self-rated health in Canadians. *Health Rep*. 2019;30(9):14-24.
65. Colley RC, Christidis T, Michaud I, Tjepkema M, Ross NA. The association between walkable neighbourhoods and physical activity across the lifespan. *Health Rep*. 2019;30(9):3-13.
66. Government of Canada. Active transportation. 2014; https://www.canada.ca/en/public-health/services/being-active/active-transportation.html. Accessed 8 July 2019.
67. Public Health Agency of Canada. *The Chief Public Health Officer's Report on the State of Public Health in Canada 2017*. Ottawa, ON: 2017.
68. Canadian Institute of Planners. *Active transportation, health and community design: What is the Canadian evidence saying?* 2012.
69. Public Health Agency of Canada. *Fast facts about Canada's neighbourhoods and physical activity*. 2011. http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/assets/pdf/fast-facts-faits-rapidesV2-eng.pdf. Accessed May 30, 2019.
70. Hajna S, Ross NA, Joseph L, Harper S, Dasgupta K. Neighbourhood walkability, daily steps and utilitarian walking in Canadian adults. *BMJ Open*. 2015;5(11):e008964.
71. Thielman J, Rosella L, Copes R, Lebenbaum M, Manson H. Neighborhood walkability: Differential associations with self-reported transport walking and leisure-time physical activity in Canadian towns and cities of all sizes. *Prev Med*. 2015;77:174-180.
72. Wasfi RA, Ross NA, El-Geneidy AM. Achieving recommended daily physical activity levels through commuting by public transportation: Unpacking individual and contextual influences. *Health and Place*. 2013;23:18-25.
73. Fraser SD, Locke K. Cycling for transport and public health: a systematic review of the effect of the environment on cycling. *Eur J Public Health*. 2011;21(6):738-743.
74. Butler GP, Orpana HM, Wiens AJ. By your own two feet: factors associated with active transportation in Canada. *Can J Public Health*. 2007;98(4):259-264.
75. Yang L, Sahlqvist S, McMinn A, Griffin SJ, Ogilvie D. Interventions to promote cycling: Systematic review. *BMJ*. 2010;341:c5293.
76. Brown BB, Tharp D, Tribby CP, Smith KR, Miller HJ, Werner CM. Changes in bicycling over time associated with a new bike lane: Relations with kilocalories energy expenditure and body mass index. *JTH*. 2016;3(3):357-365.
77. Fuller D, Gauvin L, Kestens Y, Daniel M, Fournier M, Morency P, Drouin L. Impact evaluation of a public bicycle share program on cycling: A case example of BIXI in Montreal, Quebec. *Am J Public Health*. 2013;103(3):e85-e92.
78. Panter J, Ogilvie D. Theorising and testing environmental pathways to behaviour change: Natural experimental study of the perception and use of new infrastructure to promote walking and cycling in local communities. *BMJ Open*. 2015;5(9):e007593.
79. Stewart G, Anokye NK, Pokhrel S. What interventions increase commuter cycling? A systematic review. *BMJ Open*. 2015;5(8):e007945.
80. Winters M, Teschke K, Brauer M, Fuller D. Bike Score®: Associations between urban bikeability and cycling behavior in 24 cities. *IJBNPA*. 2016;13(1):18.
81. Orrow G, Kinmonth AL, Sanderson S, Sutton S. Effectiveness of physical activity promotion based in primary care: Systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2012;344:e1389.
82. Canadian Society for Exercise Physiology. Canadian Physical Activity Guideline for Physical Activity Throughout Pregnancy. 2019; https://csepguidelines.ca/guidelines-for-pregnancy/.
83. Canadian Society for Exercise Physiology. Canadian physical activity guidelines for adults with multiple sclerosis. 2011; https://csepguidelines.ca/wp-content/uploads/2018/10/CSEP_MS_PAGuidelines_adults_en.pdf.
84. Canadian Society for Exercise Physiology. Canadian physical activity guidelines for adults with spinal cord injury. 2011; https://www.csep.ca/CMFiles/Guidelines/specialpops/SCIPAGuidelinesClient.pdf.
85. Parkinson Society Canada. Physical activity and Parkinson's Disease. 2012; https://www.csep.ca/CMFiles/Guidelines/specialpops/PSC_Physical_Activity_resource_and_chart_final%20English%20march2012.pdf.
86. Hypertension Canada. Hypertension Canada guidelines. 2015; https://guidelines.hypertension.ca/.
87. Government of Canada. Making an accessible Canada for persons with disabilities. 2018; https://www.canada.ca/en/employment-social-development/programs/accessible-people-disabilities.html. Accessed May 12, 2019.
88. Government of Canada. Budget 2019: Table of contents. Government of Canada. Ottawa: ON. 2019. https://www.budget.gc.ca/2019/docs/plan/toc-tdm-en.html. Published March 19, 2019. Accessed September 23, 2019.
89. Government of Canada. Budget 2018: Table of contents. Government of Canada. Ottawa: ON. 2018. www.budget.gc.ca/2018/docs/plan/toc-tdm-en.html. Published February 27, 2019. Accessed September 23, 2019.

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