



Position on Sedentary Behaviour and Physical Inactivity

An Integrated Population Health Approach

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northern health
the northern way of caring

“... Sometimes it feels like this. There I am standing by the shore of a swiftly flowing river, and I hear the cry of a drowning man. So I jump into the river, put my arms around him, pull him to shore and apply artificial respiration. Just when he begins to breathe, there is another cry for help. So I jump into the river, reach him, pull him to shore, apply artificial respiration, and then just as he begins to breathe, another cry for help. So back in the river again, reaching, pulling, applying, breathing and then another yell. Again and again, without end, goes the sequence. You know, I am so busy jumping in, pulling them to shore, applying artificial respiration, that I have no time to see who is upstream pushing them all in.”

McKinlay, J.; 1979

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1.0 Introduction

This report outlines the position of the Northern Health Authority regarding the increase in physical inactivity and sedentary behaviour. Physical inactivity is a primary and significant contributing factor related to increased rates of “preventable” non-communicable disease and the resulting burden on the health care system. Implementing a population health approach, we will engage with communities and people to move toward increased health and wellness. Specifically this will be accomplished by advocating and promoting decreased sedentary behaviour and increased physical activity with concomitant attention to injury prevention, prevention of functional limitations, and a graduated approach. We will work with community partners to improve the health and wellbeing and quality of life of those living, working, learning and playing in Northern BC.

2.0 Background

Physical inactivity is one of four behavioural risk factors which contribute to the development of chronic non-communicable disease. Other behavioural risk factors include diet, smoking, and problematic substance use. Behavioural risk factors are commonly interrelated and modifiable. Reduction of one risk factor may result in a ripple effect on other risk factors and lead towards improved health outcomes. However, research demonstrates that an active or sedentary lifestyle can positively or negatively influence other determinants respectively.

Globally, physical inactivity is the fourth leading modifiable cause of non-communicable disease. It is consistently and significantly associated with chronic diseases, such as diabetes, cardiovascular disease, and osteoporosis.ⁱ Physical inactivity is also the fourth leading cause of chronic disease mortality, such as heart disease, stroke, diabetes, cancers. As such, physical inactivity contributes to over three million preventable deaths annually worldwide.ⁱⁱ

Physical inactivity is on the rise. The 2007-2009 Canadian Health Measures Survey highlights that, in the past 25 years, Canadians are decreasing in muscular strength, decreasing in flexibility, have increasing body mass indices (BMI), and increasing waist circumference measures.^{iii, iv} Additionally, 85% of adults and 93% of children and youth are failing to meet the minimum Canadian Physical Activity Guidelines.^{v, vi}

The negative consequences of physical inactivity go beyond the individual and as a result have a large and significant impact on society as a whole.^{vii} As physical inactivity contributes to poorer health outcomes, inactive people tend to utilize health care services to a greater extent. Physical inactivity places extra burden on publicly funded health care systems; the costs are substantial and increasing. Adding direct and indirect costs, the total burden of physical inactivity in British Columbia is conservatively estimated at \$573 million annually. These costs are expected to increase unless upstream preventative approaches are implemented.^{viii}

To review these issues in depth, it is important to provide operational definitions for various terms. This will assist in defining individual-level and system-level goals.

- **Exercise** is a form of physical activity that is planned, structured, repetitive, and purposeful with a main objective of improvement or maintenance of one or more components of physical fitness.^{ix}

- **Physical activity** is bodily movement produced by skeletal muscles that uses energy and can increase heart rate and breathing. Examples of physical activity include: sports, exercise, playing, walking, doing household chores, gardening, and dancing.^{x, xi}
- **Incidental activity** is an activity of daily living. Examples of incidental activities include: taking the stairs, tapping your toes at your office desk, getting the mail, personal hygiene, preparing meals, light cleaning, and shopping.^{xii}
- **Sedentary behaviour** is a distinct class of behaviours characterized by little physical movement and low energy expenditure. Examples of sedentary behaviours include: sitting, watching television, working at a computer, and video gaming; these are commonly associated with “screen time.”
- **A functional limitation** is any physical problem that prevents a person from completing a task. An increase in physical activity is proven to lower the risk for a person to develop a functional limitation, particularly as they age.^{xiii}

Those who think they do not have time for bodily exercise will sooner or later have to find time for illness.

- Edward Stanley, 20 Dec. 1873

3.0 Proposed Content and Strategy

3.1 Canadian Guidelines

In 2011, the Canadian Society for Exercise Physiology released updated, evidence-based national guidelines, the *Canadian Physical Activity Guidelines* and the *Canadian Sedentary Behaviour Guidelines*. The guidelines were developed to help Canadians move toward improved health outcomes through the benefits resulting from increased physical activity and decreased sedentary behaviours. Both sets of guidelines increase awareness and understanding of the health benefits and risks associated with these respective activities. While the current Canadian physical activity guidelines target persons over the age of 5 years, the sedentary guidelines are targeted to school-aged children (5-11 years) and youth (12-17 years). Each set of guidelines are summarized below.

3.2 Canadian Physical Activity Guidelines

Four sets of guidelines exist for different age groups: 5-11 years, 12-17 years, 18-64 years, and 65+ years. For each age group, the guidelines recommend a minimum amount of time that a person should be active in a given week including recommendations for the level of intensity and type of activity. It is important to note that the recommendations are a minimum target. Overall, more physical activity provides greater health benefits. For more information, see Appendix A.

3.3 Canadian Sedentary Behaviour Guidelines

Two sets of guidelines exist for different age groups: 5-11 years and 12-17 years. For each age group, the guidelines recommend a maximum amount of time that a person should spend in “recreational screen time” and to limit time spent sitting. Contrary to the Physical Activity Guidelines, the Sedentary Guidelines set maximum targets. Overall, the time spent being sedentary should be swapped with active time with assistance from parents, family members, as well as educators.

For health benefits, children and youth should minimize the time they spend being sedentary each day. This can be achieved by:

- Limiting recreational screen time to no more than 2 hours per day; lower levels are associated with additional health benefits
- Limiting sedentary (motorized) transport, extended sitting and time spent indoors throughout the day

4.0 A Graduated Approach

While the guidelines above highlight targets for activity and sedentary behaviour, what happens between current levels and achieving those targets should be individualized. Blanket recommendations of “getting more exercise” can be ineffective.^{xiv} The process of becoming active needs to be emphasized and individually tailored. The process should make clear the steps of increasing activity by recognizing the individual starting point/level of readiness, set a timeframe with incremental goals (**SMART** goals are **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, and are **T**ime bound), and ultimate or long-term goals. While an individual may begin a graduated approach with any level of activity, the overall process should encourage increasing physical activity duration or intensity (Appendix B) over time. The graduated approach also allows individuals to assess and realize progression (i.e. “how far they’ve come”) and provides encouragement to continue with healthy lifestyle behaviour changes.

5.0 Northern Health Position

The Northern Health Authority aims to increase health and wellness and improve quality of life by promoting decreased sedentary behaviour and increased physical activity. Sedentary activity should be decreased and physical activity increased using a graduated approach with concomitant attention to injury prevention and functional limitation reduction. This aim will specifically be achieved by working with individuals and community partners to promote the following messages:

- Reduce overall sedentary behaviours.
- Increase incidental activity; emphasize EVERY MOVE COUNTS!
- Any form of regular physical activity is important and beneficial.
- Using a graduated and individualized approach, increase activity levels to meet and exceed the minimum levels recommended by the Canadian Physical Activity Guidelines.
- More daily physical activity provides greater health benefits for all ages.

6.0 Strategies to Achieve this Position

The Ottawa Charter for Health Promotion is an international resolution of the World Health Organization. Signed in Ottawa, Canada in 1986, this global agreement calls for action towards health promotion through five areas of strategic action. In concert, these strategies are mutually reinforcing and can create a comprehensive approach to addressing risk factors, such as physical inactivity and sedentary behaviour.

This section presents examples which support the five strategic action areas outlined in the Ottawa Charter to achieve the same goals outlined in this position paper. Examples are evidence-based and come from an environmental scan of strategies proven effective in other places within Canada and internationally.

6.1 Build Healthy Public Policy

A broad range of local, regional, provincial, and federal organizations have a role to play in building healthy public policies. Organizations that address planning, transportation, education and motivation, and recreation and leisure can be key contributors to building “active” public policy. Some examples include:

Healthy public policy is coordinated action that leads to health, income, and social policies that foster greater equity. It combines diverse but complimentary approaches including legislation, fiscal measures, taxation, and organizational change.

- The Ottawa Charter, 1986

- Apply affordable price structures for physical activity programs and facilities which guarantee access for all; ensure equitable access for those faced with systemic barriers (i.e. such as Aboriginals, women, persons with disabilities, and low income households).
- Regulate public transit fees and parking fees to positively discriminate in favour of active transportation (i.e. walking, cycling) and other means of transportation that deliver health and/or environmental benefits (i.e. public transit).
- Ensure safety is a consideration in the planning and design of spaces (i.e. quality lighting, maintained foot and bike paths).
- Require that “Physical Activity Impact Assessments” are conducted of new developments and re-developments.
- Fund an active transportation coordinator to promote alternatives to motor vehicles
- Enact legislation to enable joint community and school infrastructure development, the use of community resources in physical education, and the incorporation of physical activity into early childhood.

6.2 Create Supportive Environments

People interact with a variety of settings in daily life. As such, this should be considered when seeking to create supportive environments, including the spaces in which we live, work, learn, and play. Within each of these environments, we can work to support active lifestyles using such examples as:

Changing patterns of life, work, and leisure have a significant impact on health. Work and leisure should be a source of health for people. The way society organizes work should help create a healthy society. Health promotion generates living and working conditions that are safe, stimulating, satisfying, and enjoyable.

- The Ottawa Charter, 1986

6.2.1 Home

- Climate-appropriate activities
- Active family time (i.e. Act Now BC’s [Ideas for an Active Family](#))
- Reduced “screen-time” (i.e. [Screen Smart](#))

6.2.2 Work

- Incentives for active transportation to work
- Workplace programs that encourage and support employees and their families to lead active lifestyles (i.e. Health Canada’s [Workplace Health Resources](#), HR Council’s [Workplace Wellness](#) program, Public Health Agency of Canada’s [Stairway to Health](#) program)

6.2.3 School

- Promote use of parks and open spaces by a range of populations (i.e. benches, play equipment, drinking fountains, and shade)
- Safe and accessible environments that support increasing preferences for structured and less structured physical activity (i.e. parks for multiple activities, such as skateboarding, walking, sport, and recreation)

6.2.4 Leisure

- Culturally appropriate activities (i.e. for Aboriginals, new immigrants)
- Emphasize development of social connectedness and support in team-based or group activities (i.e. walking programs, such as [Walk BC](#))
- Examine barriers in current recreation activities faced by population groups (i.e. shift workers, offering of childcare services)

6.3 Strengthen Community Action

Successful actions aimed at increasing population-wide participation in physical activity are planned and implemented through multifaceted partnerships and collaborations. Often public, private, and non-governmental organizations can be involved from local, regional, provincial, and federal levels. Examples of partnerships that will build community capacity and support the promotion of physical activity include:

- Local environments to be free of crime or traffic threats
- Use of social media to promote active lifestyles and reduced sedentary behaviour
- Promote positive messaging for physical activity through a media campaign, specifically targeting populations at risk
- Coalitions of non-governmental organizations form and advocate governments for the promotion of physical activity
- Promote partnerships with organizations that support those faced with systemic barriers (i.e. such as Aboriginals, women, persons with disabilities, and low income households), or those at risk
- Engage with, and find ways to support, existing and effective programs community-based programs
- Coordinate with relevant sectors and levels to create collaborative working groups of stakeholders
- Safe and accessible routes for active transportation and recreation that make the decision to participate in these activities easier (i.e. use of signage, lighting); link active transportation routes to each other and a variety of destinations
- Facilities at public transport interchanges to allow for activity transition (i.e. bike racks, showers, change areas, and lockers)
- Promote various options to use, or fund development of, community facilities where they can serve as a social hub for community life

Health promotion works through concrete and effective community action in setting priorities, making decisions, planning strategies, and implementing them to achieve better health. As the heart of this process is the empowerment of communities – their ownership and control of their own endeavours and destinies.

- The Ottawa Charter, 1986

6.4 Develop Personal Skills

A variety of resources and support systems can support individuals and families to build better health outcomes through awareness, engagement, education and capacity building. Many stakeholders can provide focus on the different levels of behaviour change and tailor programs accordingly. Examples of programs and campaigns which encourage the development of personal skills towards increasing physical activity include:

Enabling people to learn, throughout life, to prepare themselves for all of its stages and to cope with chronic illness and injuries is essential. This has to be facilitated in school, home, work, and community settings. Action is required through educational, professional, commercial, and voluntary bodies and within institutions themselves.

- The Ottawa Charter. 1986

- Target programs and campaigns towards adults; targeting adults can create a ripple effect across families and communities (i.e. ActNow BC's [Physical Activity Strategy](#), Healthy Family BC's [Physical Activity initiative](#), [ParticipACTION](#))
- Design healthy behaviour change programs that are adapted for individual needs of specific populations (i.e. by age, ability, ethnicity; Sedentary Behaviour Guidelines are targeted towards children and youth)
- Engage physicians and allied health professionals and services to support activity prescriptions (i.e. BC's [Physical Activity Line](#), Healthy Families BC's [Prescription for Health](#))
- Provide supports to encourage incremental increases in physical activity (i.e. supporting a graduated approach through pedometer use and increasing step counts)
- Support activity through the life course and stress its importance on increasing health, well being and quality of life
- Emphasize the relationship between physical activity and an improved sense of personal and community well-being

6.5 Reorient Health Services

A broad range of people can assist in reorienting health services. For example, health professionals, local government, community planners, sport and recreation professionals, general practitioners, allied health professionals, and volunteers can influence population levels of physical activity. Some examples of where this has been effective include:

The responsibility for health promotion in health services is shared among individuals, community groups, health professionals, health service institutions, and governments. They must work together towards a health care system which contributes to the pursuit of health.

- The Ottawa Charter, 1986

- Advocate for increased support for health professionals for resourcing to engage their patients to move toward healthier lifestyles (i.e. Healthy Families BC's [Prescription for Health](#), New Zealand's Ministry of Health's [Green Prescriptions](#))
- Provide accurate, current, and consistent information on appropriate physical activity to key individuals
- Engage general practitioners in physical activity promotion and motivation
- Raise awareness among the different key stakeholders of their role in improving population levels of physical activity

- Screen patients/clients for levels of physical activity at every primary care consultation; provide brief, structured counselling and referral to community programs for insufficiently active patients (i.e. Canadian Society for Exercise Physiology's [Physical Activity Readiness Questionnaires](#))
- Make available and support free resources for practical and trusted physical activity and healthy living information (i.e. BC's [Physical Activity Line](#))

7.0 Conclusion

In conclusion, Northern Health is adopting a position on physical inactivity and sedentary behaviour as a primary modifiable behavioural risk factor in the development and progression of a wide variety of chronic disease states. These disease states significantly burden our health care system and population health. The position is consistent with provincial and federal initiatives. Moreover, this position presents a variety of evidence-based strategies undertaken in other places and are proven strategies to address the negative ramifications associated with physical inactivity and sedentary behaviours. These strategies support the comprehensive framework presented by the Ottawa Charter and support Northern Health's position on Sedentary Behaviour and Physical Inactivity.

*Physical activity is a powerful investment
in people, health, the economy and sustainability.*

- The Toronto Charter, 2011

8.0 Other Resources

British Columbian

- [Healthy Families BC - Physical Activity](#)
- [Physical Activity Line](#)
- [Act Now BC - Physical Activity](#)

Canadian

- [CSEP: Canadian Physical Activity Guidelines](#)
- [PAR-Q & You \(A Questionnaire for People Aged 15-69\)](#)
- [ParticipACTION Home](#)
- [Physical Activity - Healthy Living - Public Health Agency of Canada](#)
- [Active Living: Pan-Canadian Physical Activity Strategy](#)

International

- [Physical Activity Resources for Health Professionals: Promotion | DNPAO | CDC \(United States\)](#)
- [Green Prescriptions Program \(New Zealand\)](#)

Global

- [WHO | Physical Activity](#)
- [Global Advocacy for Physical Activity - Toronto Charter for Physical Activity](#)

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Appendix A: Canadian Guidelines on Physical Activity

Age Group	5 – 11 years	12 – 17 years	18 – 64 years	65 years and older
Guidelines	<p>For health benefits, children should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.</p> <p>This should include:</p> <ul style="list-style-type: none"> Vigorous-intensity activities at least 3 days per week. Activities that strengthen muscle and bone at least 3 days per week. More daily physical activity provides greater health benefits. 	<p>For health benefits, youth should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.</p> <p>This should include:</p> <ul style="list-style-type: none"> Vigorous-intensity activities at least 3 days per week. Activities that strengthen muscle and bone at least 3 days per week. More daily physical activity provides greater health benefits. 	<p>To achieve health benefits, adults should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.</p> <ul style="list-style-type: none"> It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week. Those with poor mobility should perform physical activities to enhance balance and prevent falls. More physical activity provides greater health benefits. 	<p>To achieve health benefits, and improve functional abilities, adults aged 65 years and older should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.</p> <ul style="list-style-type: none"> It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week. Those with poor mobility should perform physical activities to enhance balance and prevent falls. More physical activity provides greater health benefits.
	<p>Moderate-intensity physical activities will cause children to sweat a little and to breathe harder. Activities like:</p> <ul style="list-style-type: none"> Bike riding Playground activities 	<p>Moderate-intensity physical activities will cause teens to sweat a little and to breathe harder. Activities like:</p> <ul style="list-style-type: none"> Skating Bike riding 	<p>Moderate-intensity physical activities will cause adults to sweat a little and to breathe harder. Activities like:</p> <ul style="list-style-type: none"> Brisk walking Bike riding 	<p>Moderate-intensity physical activities will cause older adults to sweat a little and to breathe harder. Activities like:</p> <ul style="list-style-type: none"> Brisk walking Bicycling
	<p>Vigorous-intensity physical activities will cause children to sweat and be ‘out of breath’. Activities like:</p> <ul style="list-style-type: none"> Running Swimming 	<p>Vigorous-intensity physical activities will cause teens to sweat and be ‘out of breath’. Activities like:</p> <ul style="list-style-type: none"> Running Rollerblading 	<p>Vigorous-intensity physical activities will cause adults to sweat and be ‘out of breath’. Activities like:</p> <ul style="list-style-type: none"> Jogging X-country skiing 	<p>Vigorous-intensity physical activities will cause older adults to sweat and be ‘out of breath’. Activities like:</p> <ul style="list-style-type: none"> Cross-country skiing Swimming
	<p>Being active for at least 60 minutes daily can help children:</p> <ul style="list-style-type: none"> Improve their health Do better in school Improve their fitness Grow stronger Have fun playing with friends Feel happier Maintain a healthy body weight Improve their self-confidence Learn new skills 	<p>Being active for at least 60 minutes daily can help teens:</p> <ul style="list-style-type: none"> Improve their health Do better in school Improve their fitness Grow stronger Have fun playing with friends Feel happier Maintain a healthy body weight Improve their self-confidence Learn new skills 	<p>Being active for at least 150 minutes per week can help reduce the risk of:</p> <ul style="list-style-type: none"> Premature death Heart disease Stroke High blood pressure Certain types of cancer Type 2 diabetes Osteoporosis Overweight and obesity <p>And can lead to improved:</p> <ul style="list-style-type: none"> Fitness Strength Mental health (morale and self-esteem) 	<p>Being active for at least 150 minutes per week can help reduce the risk of:</p> <ul style="list-style-type: none"> Chronic disease (such as high blood pressure and heart disease) and, Premature death <p>And also help to:</p> <ul style="list-style-type: none"> Maintain functional independence Maintain mobility Improve fitness Improve or maintain body weight Maintain bone health and, Maintain mental health and feel better

Appendix B: Physical Activity Intensity and Duration

Physical activity may be measured in terms of METs (metabolic equivalents), units used to estimate the metabolic cost (oxygen consumption) of physical activity. One MET equals the resting metabolic rate of approximately 3.5 mL O₂/kg/min, and represents the approximate rate of oxygen consumption of a seated adult at rest.

Moderate physical activity includes activity performed at an intensity of 3 to 6 METs, or the equivalent of walking briskly at approximately 5 to 8 kilometers (3 to 5 miles) per hour. Leisure cycling, moderate effort swimming, playing golf (walking), general cleaning at home, or lawn mowing also constitute moderate physical activity (Figure 1). **Vigorous physical activity** includes activity performed at >6 METs, such as running, rope jumping, and calisthenics (eg, push-ups, pull-ups, sit-ups, jumping jacks).

Figure 1

Moderate physical activities



Washing and waxing a car for 45-60 minutes	Less vigorous, more time
Washing windows or floors for 45-60 minutes	
Playing volleyball for 45 minutes	
Playing touch football for 30-45 minutes	
Gardening for 30-45 minutes	
Wheeling self in wheelchair for 30-40 minutes	
Walking 1 3/4 miles in 35 minutes (20 min/mile)	
Basketball (shooting baskets) for 30 minutes	
Bicycling 5 miles in 30 minutes	
Dancing fast (social) for 30 minutes	
Pushing a stroller 1.5 miles in 30 minutes	
Raking leaves for 30 minutes	
Walking 2 miles in 30 minutes (15 min/mile)	
Water aerobics for 30 minutes	
Swimming laps for 20 minutes	
Wheelchair basketball for 20 minutes	
Basketball (playing a game) for 15-20 minutes	
Bicycling 4 miles in 15 minutes	
Jumping rope for 15 minutes	
Running 1.5 miles in 15 min (10 min/mile)	
Shoveling snow for 15 minutes	
Stairwalking for 15 minutes	More vigorous, less time

Source: Coleman & Walker, 2004