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LITERATURE SYNTHESIS AND ANNOTATED BIBLIOGRAPHY OF BARRIERS TO HEALTHY EATING, PHYSICAL ACTIVITY, AND ACTIVE TRANSPORTATION IN THE NORTH

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ABOUT THIS DOCUMENT

This document presents a synthesis and annotated bibliography of 28 articles on health promotion in the North. It was produced to assist the Children's' Mobility Health and Happiness CLASP Coalition implement a school travel planning project. This work was undertaken by Reciprocal Consulting on behalf of the CAPTURE Project. The CAPTURE Project is a strategic initiative funded by the Canadian Partnership Against Cancer. CAPTURE is creating a knowledge exchange platform to facilitate the collection, sharing and using of real-world knowledge on health promotion programs (www.thecaptureplatform.ca). This work was funded by the Public Health Agency of Canada.

The literature review was conducted by searching both the peer-reviewed literature through PsychINFO and MEDLINE; and the grey literature through the Google search engine. The search was limited to articles within the last 10 years, from 2001 to 2011. The focus of the search was to locate articles addressing barriers to healthy eating, physical activity and active transportation in the North, including Canada and the United States. The search words included:

- Remote, rural, northern, Aboriginal
- Transportation barriers, transportation troubles, transportation issues
- Northern communities (NWT, Yukon, Nunavut, northern provinces).
- Barriers and built environment
- Barriers and physical activity
- Barriers and walking and North
- Barriers and walking programs
- North, physical activity, walking, walking programs, school transport
- Barriers to nutritional food, North and built environment, family
- Physical activity and North

The synthesis is presented first, followed by the annotated bibliography.

SYNTHESIS

WHAT IS THE SITUATION?

Physical inactivity, consumption and access to healthy nutritious foods are prevalent barriers to health and wellness found in the literature (Skinner Hanning, & Tsuji, 2006; O'brien & Gilbert, 2010; Healthy Foods North, 2009; Auld 1995; and Hubsmith 2007). These barriers have deleterious effects. Skinner et al. explain that obesity and type 2 diabetes are related to physical inactivity and eating non-nutritious foods, and a rapid change in Arctic diet (Healthy Foods



North). Further, O'Brien and Gilbert note that contributing to physical inactivity is reduced likelihood that rural and remote dwelling individuals will take part in active transportation to and from school and it is this group of youth who have an increased risk of obesity and physical inactivity. This literature review briefly summarizes barriers to participating in physical activity and healthy eating interventions, solutions for dealing with those barriers, as well as a brief summary of interventions to deal with challenges that were identified in this literature review on barriers.

BARRIERS EXPERIENCED

There are a number of barriers that can restrict walking in Northern Canada. For example, environmental barriers such as safety concerns (e.g. from wild animals), that prevent many individuals from walking outdoors due to fear (Booth, Pinkston, & Poston, 2005; Brownson et al. 2000; Kirby, Lévesque, Wabano, & Wobertson-Wilson, 2007; Salis & GlanzSource, 2006; Simon & Fielding, 2009; O'Brien & Gilbert, 2010; Transport Canada, 2010). Other barriers include living in a hilly or uneven terrain (Booth, et al.), as well as living in a high traffic area where there are no walking routes (O'Brien & Gilbert) can also be an impediment to walking. Other barriers include a lack of "walkable" environment (e.g. living in a place where there the infrastructure is not conducive to walking) such as sidewalks and trails with reduced access to walking (Frank, Saelens, Powell, & Chapman, 2007; O'Brien & Gilbert; Sallis & GlanzSource). Other environmental barriers include low temperatures (Law, Petrenchik, King, & Hurley, 2007), poor weather (Centre for Disease Control and Prevention, 2007) and insufficient lighting (Booth, et al.; Law et al., 2007; O'Brien & Gilbert; Transport Canada; Simon & Fielding), all of which are common in the North. Finally the "proximity and directness of routes home" (e.g. the total walking distance) and the aesthetics of the route (e.g. pleasing natural environment features) impact the frequency of walking (Brownson, Hoehner, Day, Forsyth, Sallis; 2009; O'Brien & Gilbert; Sallis & GlanzSource; Skinner).

In addition to the environmental factors, there are several barriers specific to the individual. The attitudes of the individuals living in the community or participating in a walking program affect their participation; if people believe that they cannot walk that far of a distance or if the walk is perceived to be too hard, then they will not want to participate (Eng et al., 2003). Individuals with low motivation and a lack of interest in walking is a barrier (Canada Fitness and Lifestyle Research institute, 1996; Skinner, 2006); these barriers are exacerbated when there are few programs available in the community that encourage walking, and a lack of community support (e.g. personnel and volunteers) (Skinner). Furthermore, competing sedentary activities such as playing video games and watching television can further decrease motivation for walking (Skinner). Obesity itself is a barrier to programs as walking for an obese person is much more strenuous (Kirby et al., 2007); it is noteworthy that there is a prevalence of obesity in the northern regions of Canada. Before individuals will participate in a walking program, they must first overcome their own personal barriers.

Other barriers to walking are with regard to having access to facilities and equipment. Having a lack of facilities or improper equipment (e.g. comfortable shoes) can impede walking (Canada Fitness and Lifestyle Research institute, 1996; Kirby et al., 2007; O'Brien & Gilbert, 2010; Skinner, 2006;). In some cases, improper equipment (e.g. shoes without proper support) can even lead to injury. Related to this, the financial burden of participating in physical activity (e.g. buying comfortable walking shoes) is a barrier in itself (Canada Fitness and Lifestyle Research institute; Skinner).

Furthermore there is some relevant demographic information regarding walking barriers. Boys tend to walk to school more than girls, while younger children tend to walk to school more than teenagers. Furthermore, children from a lower socioeconomic background also tend to walk to school more. Finally, children whose parents are married or have partners are more likely to walk to school (Canadian Fitness and Lifestyle Research Institute, 2005).

Recently there have been a number of studies documenting the food insecurity of the Indigenous people who live in the Arctic. Access to proper nutrition can be quite difficult for many individuals (Skinner, 2006). For example, it has been found that people living in the Arctic are deficient in many vitamins necessary for overall health, particularly vitamin D (Kuhnlien et al., 2006). Additionally, many individuals lack an awareness of what consists of proper nutrition (Skinner). Part of food insecurity is caused by an increase in consumption of store bought foods as opposed to traditional foods (Damman, Eide, & Kuhnlien, 2008). Not only are store bought foods less healthy for you (e.g. high in sugar and saturated fat, while low in nutritional value) (Damman, et al.; Lambden, Receveur, Marshall, & Kuhnlien, 2006), they are also very expensive (Damman, et al.; Simoneau & Eceveur, 2000; Skinner). Cost is a big problem because not only does food cost up to three times more in the North as compared to other parts of Canada, but there is also a prevalence of "underemployment, unemployment, low incomes, and high cost of living" in the Northern territories (Lambden et al., 2006). Additionally there has been a decrease in the traditional sharing of food due to the purchasing of market food and due to hunters selling off their excess meat rather than sharing with their community (as was traditional) (Damman, et al.).

Unfortunately, food insecurity is not only caused by an increase in the consumption of market foods; there are several barriers that prevent the Inuit people from accessing and consuming traditional foods. One of the main concerns that has recently arisen is the prevalence of heavy metals and organochlorines in traditional food such as fish and sea mammals (Receveur, Boulay, & Kuhnlien, 1997; Kuhnlien et al., 2006; Damman, et al., 2008); this would mean that consuming certain traditional foods is no longer safe or healthy. Access to hunting and fishing equipment including transportation (e.g. snowmobiles) is no longer easily accessible due to the high cost (Lambden et al., 2006; Damman, et al.); Elders in particular have limited access to hunting and fishing equipment (Lambden et al.; Skinner, 2006). There are numerous other barriers to hunting, gathering and fishing including the overexploitation of certain food sources, food is out of season, distance to harvest food, food is too rich, do not eat out of respect, will only eat the food if it is fat, job prevents hunting and fishing, food is too costly to prepare,

unfamiliar with food and food is traditionally only eaten in the past when there was a food shortage (Damman, et al.). Another barrier to eating traditional food is that much of the younger generation does not know how to hunt or fish. Part of the reason for this is that children spend all day in school rather than out with their family members learning how to hunt, fish and gather (Damman, et al.). Some youth do not wish to learn because they want to avoid the negative associations related to hunting or any discrimination due to their participation in cultural activities (Damman, et al.). Regardless, there has been a large decrease in the amount of traditional food consumed.

The prevalence of market foods over traditional foods presents its own barriers to food access. As previously mentioned, market foods are quite expensive (Damman, et al., 2008; Skinner, 2006; Simoneau & Eceveur, 2000). Additionally, not only does the food have less nutritional value, but often the quality of the food is very low (e.g. produce is rotten) (Skinner). Also, because of the geographical barrier, the availability of foods is limited, which limits access to certain vitamins and nutrients. The geography poses a barrier in another way as well; some individuals do not have easy access to grocery stores due to distance. Finally, trust and attitude issues can pose a barrier to market food as well; the attitudes of market staff can be disempowering, while some individuals harbor distrust for market staff (Skinner). It is difficult to access not only nutritional food, but food overall.

SOLUTIONS

In addressing concern and barriers around active modes of transportation and physical activity in Northern communities, there are several suggestions for promoting walking within a community. Solutions range from better city planning on school siting to linking trails together (O'Brien & Gilbert, 2010) and to school sites (Centre for Disease Control and Prevention, 2007; Hubsmith, 2007). A number of studies have found that access to sidewalks can increase walking significantly (Brownson et al., 2000; Brownson, et al., 2009; Sallis & GlanzSource, 2006). Having safe routes to walk on also increases walking; safety can be increased by walking in groups, and having a fenced walking area, and establishing a safety committee within the community (Booth, et al., 2005; Brownson et al.; Kirby, Lévesque, Wabano, & Wobertson-Wilson, 2007; Sallis & GlanzSource; Simon & Fielding, 2009). Enforcing lowered speed limits and implementing traffic calming procedures will help with concerns regarding traffic (Centre for Disease Control and Prevention). Paving and building sidewalks along highways, as well as separating motorized from non-motorized traffic is a solution to highway barriers (O'Brien & Gilbert). Finally, Individuals who have access to an aesthetically pleasing walking environment are more likely to make use of it through walking (Kirby et al.).

With regards to walking programs, there are several suggestions for improving success of such programs. It is recommended that walking programs in Indigenous communities include a holistic approach as well as cultural activities (Kirby et al., 2007). In Nunavut, this is accomplished with "hearings [that] are carried out with the Nunavummiut to get feedback on policy and service delivery, which helps shape the programmes [sic] according to local culture

and needs” (Damman, et al., 2008). In order to increase the success of walking programs, they should be launched in conjunction with educational programs on physical activity, promotional activities, and policies (Law et al., 2007). It also helps to include incentives to participate (Law et al.). When considering individuals for walking programs, it is important to know what motivates them, according to the Canadian Fitness and Lifestyle Research Institute, children are motivated to participate in programs for four reasons: (1) they find walking satisfying, (2) walking helps them accomplish goals, (3) friends participate in the walking program, and (4) they participate in the walking program to please others (e.g. parents). Finally, it is important to remember that each community is unique and programs should be tailored to each individual community (Simon & Fielding, 2009)

There are a number of solutions to increase food security in the northern territories. In terms of solutions for healthy eating and improving access to nutritious foods, Skinner et al (2006) suggests school snack and breakfast programs as well as school kitchens to support healthy eating. Increasing resources (personnel, volunteers) could also increase healthy eating. Auld (1995) suggested that nutrition workers visit grocery stores and examine cost and alternative healthy options.

Regarding traditional foods; it is recommended that the Inuit continue to eat more traditional foods as they are higher in vitamin A, E, Iron, Zinc (Damman, et al., 2008). Programs should also be provided to educate people on the nutritional value (or lack thereof) of Market foods as compared to traditional foods (Damman, et al.; Receveur, et al., 1997). There are a number of traditional foods that contain essential levels of vitamins A, E and D including beluga whale blubber and oil, narwhal blubber, walrus, and caribou liver (Kuhnlien et al., 2006). Land skill camps are being provided in some communities to overcome barriers to children learning how to hunt and fish (and consequently, also walk more) (Damman, et al.). Additionally, some communities have community freezers where hunters place excess meat; the meat is available to anyone in the community (Damman, et al.). Access to traditional food can further be increased by encouraging it to be sold in the communities. Although the Food Mail Program has been helpful in stemming some of the food insecurity (Damman, et al.; Lambden et al., 2006), there are still other measures that can be taken. For example, programs that help make market food and hunting and fishing equipment more affordable and accessible would be very useful (Lambden et al.).

TYPES OF INTERVENTIONS

This final section describes interventions that were currently underway, programs that had been identified through the literature search on barriers. The following will detail interventions that have been implemented to address the problems and barriers of physical inactivity, built environment, unhealthy diet and access to nutritious food.

1. In Ontario, a mandatory time of 20 minutes of daily physical activity (vigorous) requirements were introduced to elementary schools. In addition, nutrition standards for vending machines were recommended (Healthy Ontario, 2006).
2. Healthy Ontario also implemented the student nutrition program which provided healthy meals and healthy snacks to students throughout the day (Healthy Ontario, 2006)
3. There have also been interventions at the retail level in which stores would include taste tests, cooking demonstrations and healthier alternatives; all of the intervention materials would include the healthy foods north logo (Healthy Foods North, 2009)
4. The WalkSmart program is a year round program that provides incentives for physical activity. Individuals receive a pedometer and track their progress. Each month, individuals submit their progress for a chance to win practical prizes (Transport Canada, 2010)
5. While this program is not in northern communities, the intervention is interesting. The Texas bicycle coalition (TBC) involves placement of outreach workers in the hubs of towns and villages where they work from the center to the outlying residents. The actual program involves holding a kick-off event to promote the cycling program, as well as providing free education on cycling, resource binders, and training physical education teachers (Hubsmith, 2007).
6. This program also occurs in the USA, called the safe route to bus stops program is based on the same principles of the walking school bus, with the exception that this program provides routes to centralized bus stops (Hubsmith, 2007).
7. The urban meals on wheels program have made great advancements in their inclusion of ethnic food option in their menu (Auld, 1995).

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ANNOTATED BIBLIOGRAPHY

BARRIERS TO HEALTHY EATING IN THE NORTH

Auld, M. (1995). Barriers to introducing nutrition services in rural communities. 3rd National Rural Health Conference, Mt. Beauty, 3-5 February, 361-366.

Challenges/Barriers

- Poor access to nutrition support (361)
- Less social support contributing to social isolation (361)
- In rural areas ... nutritional risk ... is due to non-existent or inadequate health services and facilities combined with poor social conditions and economic uncertainty (361)
- Barriers which hinder nutrition ... [are] diet, poor access to nutrition support services, attitudes of local service providers (362)
- Rural grocery stores are comparatively small, with less variety, decreasing the access to healthy foods (362)
- Cost of food [is] much greater (362)
- It is paradoxical that in agricultural areas the cost of fruit and vegetables may be high (362)
- Chaotic food and distribution systems to rural communities (362)
- Access to healthy foods was limited in local food outlets (362)
- Lack of transport ...restricting shopping to local general stores (362)
- Low socio-economic status (362)
- Low employment levels (362)
- Relying on friends or relatives to drive them (363)

Solutions

- It is recommended that nutrition workers visit local supermarkets to become acquainted with the cost and variety of items available, so a range of alternative products could be suggested (362)
- Nutrition education (362)
- Conducting supermarket tours was found to be an effective way to form networks with the local retailers and learn more about the local food systems (362)
- Urban Meals on Wheels made significant advances to cultural appropriateness [with] the Ethnic Food Kit which incorporates ethnic foods into the regular Meals on Wheels menu (363)
- Nutrition education to individuals and groups to address the dietary norms of locals and advised on alternative eating practices (363)
- Include food packaging, food items and recipes in nutrition education (365)

Damman, S., Eide, W.B, & Kuhnlein, H.V. (2008). Indigenous Peoples' Nutrition Transition in a Right to Food Perspective. Food Policy, 33, 135-155.

Barriers to Traditional Food Intake:

- Higher access to store bought food causes a decrease in consumption of traditional food
- “Trans-boundary contaminants like heavy metals and persistent organic pollutants had found their way into important sources of country food in the Canadian Arctic, possibly threatening the health and food security of the Inuit” (146)
- Food sources have been overexploited in some areas
- Modern perceptions on hunting; youth do not want to kill animals
- Dog sleds and kayaks no longer sufficient to travel to hunt, require more costly snowmobiles
- Equipment is expensive – it is hard to make a living hunting full-time
- “Land-skills and norms linked to appropriate hunting and harvesting are not always respected” (147)
- Less time for Inuit children to learn hunting/fishing skills as they go to school full-time
- Do not share food as much; markets sell food while many hunters sell excess meat rather than sharing it
- High food costs
- Are unaware of the health impacts of eating unhealthy market food (e.g. chips, pop etc...)
- “Discriminatory attitudes in the mainstream population towards expressions of indigenous culture, including food, may also lead to unwillingness among young people to uphold harvesting and food traditions” (150)

Solutions:

- Traditional food has more vitamin A and E, iron and zinc, and less saturated fat than store bought food
- “Hearings are carried out with the Nunavummiut to get feedback on policy and service delivery, which helps shape the programmes according to local culture and needs” (137)
- “Land skill camps” are held for Inuit children to learn cultural activities such as hunting and fishing
- Community freezers are found in many communities; hunters place excess meat in freezers to be accessed by anyone in the community
- “Food Mail Program”: subsidizes transportation costs for certain store bought foods such as fruits and vegetables
- Increasing access to traditional foods by selling them in the communities

Healthy Foods North. (2009). Nunavut/Northwest Territories: Healthy foods north – a culturally appropriate and community-based program to promote healthy eating and lifestyle. Retrieved from <http://www.phac-aspc.gc.ca/publicat/2009/be-eb/nunavut-eng.php>

Challenges/Barriers

- In northern communities of Nunavut and Northwest Territories ... chronic diseases such as heart disease and diabetes are high. This is largely attributed to a rapid transition in the Arctic diet and lifestyle (Healthy Foods North, 2009, 1)
- Physical activity levels are decreasing... [and] traditional food are increasingly replaced with processed foods high in sugar and fat, and low in fibre and nutrients (Healthy Foods North, 2009, 1)

Solutions

- A multi-level intervention program that functions at the individual, household and community level ... the project involves 2 main interventions (2):
 - Store Interventions – including taste tests, cooking demonstrations, posters, flyers, and shelf labels with the Healthy Foods North logo identifying healthier alternatives; and
 - Community Component – integration of activities into workplaces and community events including coffee station makeovers, health fairs, school programs, the use of local media, as well as promoting traditional foods in cooking classes and walking programs.

Healthy Ontario. (2006). Ontario's action plan for healthy eating and active living. The Ministry of Health Promotion, Toronto, ON: Queen's Printer for Ontario, 1-22.

Challenges/Barriers

- Lack of recreation facilities, bike paths and sidewalks in many communities (7)
- Urban planning and land-use practices that create communities where people have to use their cars to get to stores, work and school (7)
- Lack of healthy public policy to support healthy eating and active living (7)
- Low incomes which affect people's ability to buy healthy food or pay to participate in recreation programs (7)
- The high cost of fresh fruits and vegetables – particularly in northern and remote communities – and the high cost of sport and recreation programs in some communities (7)
- Lack of awareness about facilities in the community that can be used for recreation (7)

Solutions

- Four key strategies to make healthy eating and active living easier for all Ontarians where they live, work, learn and play (9):
 - Grow healthy children and youth
 - Increase opportunities for physical activity and sport
 - Support healthy schools
 - Improve access to healthy foods
 - Build healthy communities
 - Partner with Aboriginal communities
 - Promote healthy urban design
 - Help Ontarians access dietitians
 - Champion healthy public policy
 - Build partnerships for change
 - Foster learning and innovation
 - Invest in results
 - Promote public awareness and engagement
 - Support public education and marketing campaigns
 - Align public awareness efforts
 - Inform parents, caregivers and professionals (9)

- Improve access for children and youth (10)
- Support the establishment of basketball leagues, aerobic classes, etc (10)
- Promote and expand the Eat Smart program (12)
- Introduce daily physical activity as a mandatory component of the elementary school curriculum, requiring a minimum of 20 minutes of moderate to vigorous physical activity each school day (10)
- Recommend nutrition standards for foods and beverages in elementary school vending machines (10)
- Funding for the student nutrition program ... that provides healthy meals and snacks to elementary and secondary school students during the school day (10)

Kuhnlein, H.V., Barthet, V., Farren, A., Falahi, E., Legge, D., Receveur, O., & Berti, P. (2006). Vitamins A, D, and E in Canadian Arctic Traditional Food and Adult Diets. *Journal of Food Composition and Analysis*, 19, 495-506.

Barriers to Proper Nutrition:

- Traditional food from the Arctic has been found to be “the carrier of a variety of organochlorine and heavy metal contaminants”, particularly for fish and sea mammals. (495)
- People who live in the Arctic are at a particular risk to vitamin D deficiency due to the long, dark winters.
- The amount of vitamins found in a traditional food source depends on “geographic availability, seasonality and physiological state/maturity” (500)

Solutions:

- “Excellent sources of retinol (e.g. vitamin A) are found in beluga whale blubber and oil, narwhal blubber, ringed seal liver, walrus liver, caribou liver, moose liver, and loche liver” (498); retinol is concentrated when food is cooked.
- The best sources of vitamin D or Cholecalciferol included “beluga blubber and oil, narwhal blubber, ringed seal liver, arctic char flesh, cisco eggs, lake trout flesh, loche eggs and liver, and sculpin” (498)
- The best sources of vitamin E or α -Tocopherol included “the fats of beluga, narwhal (selected samples), walrus flesh and muktuk, and caribou liver” (498)

Lambden, J., Receveur, O., Marshall, J., & Kuhnlein, H.V. (2006). Traditional and Market Food Access in Arctic Canada is Affected by Economic Factors. *International Journal of Circumpolar Health*, 65, 331-340.

Barriers to Proper Nutrition:

- “Diets that once consisted solely of traditional food now include foods that are typically higher in saturated fats and sugar” (331)

- Market foods are low cost, energy dense and taste delicious because of the high contents of sugar and fat (331)
- Barriers to food access include “under-employment, unemployment, low incomes and high living costs” (331)
- “When compared to southern communities, people in the Arctic pay much more for groceries that are often inferior in quality, variety and nutritional value” (331)
- Barriers to traditional food include a “lack of hunting and/or fishing equipment” (331)
- Elders have less access to hunting and fishing equipment than other age groups (338)
- The majority of the participants noted that they could not afford all the food that they needed (338)
- Many of the participants felt that hunting and fishing were too expensive (339)

Solutions:

- The government Food Mail Program has been very helpful
- Food security can be increased by making market food affordable, and by making fishing and hunting more affordable and accessible.

Receveur, O., Boulay, M., & Kuhnlein, H.V. (1997). Decreasing Traditional Food Use Affects Diet Quality for Adult Dene/Métis in 16 Communities of the Canadian Northwest Territories. American Society for Nutritional Sciences, 127, 2179-2186.

Barriers to Traditional Food:

- Organochlorine and heavy metal contaminants can be a barrier to consuming traditional food
- The Indigenous people from the Arctic have “overall low intakes of calcium, vitamin A, folate and dietary fiber” (2185)

Solutions:

- Proper nutrition in the Arctic can be achieved with “adequate income, availability good-quality market food, and education in the use of the new market food” (2185)

Skinner, K., Hanning, R.M., & Tsuji, L.J.S. (2006). Barriers and supports for healthy eating and physical activity for First nation youths in northern Canada. International Journal of Circumpolar Health, 65(2), 148-161

Challenges/Barriers

- Limitation of the knowledge of obesity (Skinner et al, 2006, 149)
- Topics raised by participants during the interviews included details of the school environment, aspects of food availability, remoteness, transportation, and family relationships (153)
- The core issue related to healthy eating and physical activity ... was empowerment ... to build their capacity for healthier living (153)

- Trust, resources, opportunities [were also identified] (153)
- Sub-themes included food security, cost, accessibility/availability, capacity building/community support, programs/training and the school snack/breakfast program (154)
- Empowerment:
 - o Illiteracy was identified as a barrier to a healthy lifestyle (154)
 - o Feeling disempowered when they spoke about the grocery store and their access to healthy foods. A number ... had tried to request specific foods from the grocery store without success. Some complained to the manager about the quality of the produce, but were told not to pursue the issue. They noticed community members buying produce even when it looked rotten, because it was the only produce available. Even when the fruits and vegetables were no longer fresh, the store would not reduce the price. A sale flyer would come out periodically, but often the foods in the flyer were not in stock (154)
- Lack of Resources
 - o High cost of food (154)
 - o Lack of variety of foods (154)
 - o Lack of availability of foods (154)
 - o Lack of funding (154)
 - o Lack of personnel (154)
 - o Lack of facilities (154)
 - o Lack of equipment (154)
- Trust
 - o (mis)trust in the grocery store manager(s) (156)
- Opportunities
 - o Lack of programs and resources (156)
 - o Lack of organized sports outside of the school gymnasium (156)
- Barriers to healthy eating and physical activity (156):
 - o External Barriers to Healthy Eating
 - Food Insecurity
 - Low resources
 - High cost
 - Little programs
 - Funding
 - Availability of foods is low
 - Low food quality
 - Little variety of healthy foods
 - High cost of transportation
 - Few retail outlets
 - Low community support/capacity building
 - o External Barriers to Physical Activity
 - Low resources
 - Low facilities
 - Low equipment
 - High cost
 - Little programs
 - Not enough organized activities

- Not enough sports teams
 - Funding
 - Low community support/capacity building
 - Personnel
 - Volunteers
 - Internal Barriers to Healthy Eating
 - Disempowerment
 - Low motivation/interest
 - In eating a healthy diet and
 - Personal taste/preference for less healthy foods
 - Low exposure to different foods
 - Caregiver education/skills
 - Compromised food selection/preparation
 - Low literacy
 - Little time
 - Internal Barriers to Physical Activity
 - Disempowerment
 - Low motivation/interest
 - In being physically active
 - Little exposure to different physical activities
 - Preference for sedentary activities
 - Caregiver education/skills
 - High competing activities
 - Video games, internet, television
 - Little time
- Barriers/Threats (158):
 - Socio-economic status
 - Remoteness

Solutions

- Increasing resources could lead to the establishment of infrastructure and result in capacity building at the community-level. The school snack/breakfast program emerged as a valued resource that ... supports healthy eating (155)
- [The school snack/breakfast program] could be expanded and enhanced with increased resources (e.g., personnel, time, money and food variety; 155)
- Need to have facilities for the whole community, both internal and external from the school (155)
- Increase physical activity [by] initiat[ing] more organized activities (156)
- Supports/Opportunities (158):
 - School snack/breakfast program
 - Accessibility of current facilities
 - School kitchen
 - Opportunities to:
 - Expand and enhance current programs
 - Introduce new programs
 - Increase organized activities
 - Build community capacity

Simoneau, N., & Eceveur, O. (2000). Attributes of Vitamin A- and Calcium –Rich Food Items Consumed in K’asho Got’ine, Northwest Territories, Canada. Journal of Nutrition Education, 32, 84-93

Barriers to Traditional Food:

- Barriers to adequate intake of vitamins can include “cultural beliefs and values, cost and availability of foods, and potential for change in food behavior” (88)
- Specific barriers to eating traditional food included no equipment to get food, food is out of season, food looks unhealthy to eat, the distance to harvest the food, unfamiliarity with the food, do not know how to hunt or fish, the food is too rich, there is an intolerance to the food, do not eat out of respect, will eat only if food is fat, cannot fish/hunt because of job, food was traditionally only eaten in the past when there was a food shortage, or food is too expensive to prepare

Vanasse, A., Demers, M., Hemiari, A., & Courteau, J. (2006). Obesity in Canada: Where and how many? International Journal of Obesity, 30, 677-683.

Barriers to a Healthy Body Weight:

- The Northern communities have a low level of fruit and vegetable consumption
- The higher level of obesity in Northern communities could be related to genetics
- Lower socioeconomic status is related to obesity

BARRIERS TO PHYSICAL ACTIVITY AND WALKING TO SCHOOL IN THE NORTH

Booth, K.M., Pinkston, M.M., & Poston, W.S.C. (2005). Obesity and the Built Environment. Journal of the American Dietetic Association, 105, S110-S117.

Barriers to Walking:

- Barriers to walking can include “safety concerns, uneven and hilly terrain, or insufficient lighting” (S110)
- “residents of sprawling counties walked less, had higher MBIs, and higher obesity and hypertension prevalence” (S114)

Brownson, R.C., Hoehner, C.M., Day, K., Forsyth, A., & Sallis, J.F. (2009). Measuring the Built Environment for Physical Activity: State of the science. American Journal of Preventive Medicine, 36, S99-S123.

Barriers to Walking:

- The “proximity and directness of routes home” and the city infrastructure (e.g. sidewalks, bicycle lanes, and trails” all impact walking (S99)

Brownson, R.C., Housemann, R.A., Brown, D.R., Jackson-Thompson, J., King, A.C., Malone, B.R., & Sallis, J.F. (2000). Promoting Physical Activity in Rural Communities: Walking trail access, use, and effects. American Journal of Preventive Medicine, 18, 235-241.

Barriers to Walking Programs:

- A barrier to walking programs in rural areas includes a lack of places to walk (e.g. few sidewalks, no shopping malls)
- “neighborhood safety may have a direct relationship with rates of physical activity” (240)

Solutions:

- Building walking trails can promote walking – particularly for “women and persons in lower socioeconomic groups” (239)

Canadian Fitness and Lifestyle Research Institute. (2005). Physical Activity and Sport: Encouraging Children to be Active. Ottawa, Ontario: C. Cameron, R. Wolfe, & C. Craig.

Barriers to Walking:

- Boys are more likely to walk to school than girls, while younger children are more likely to walk to school than teenagers.
- Children of younger parents tend to walk to school more than children of older parents
- Children from a lower socioeconomic background are more likely to walk to school
- Children whose parents are married or living with a partner are more likely to walk to school

Solutions to Walking:

- Children report that they participate in physical activity because it is satisfying, it helps them accomplish goals, their friends do, or to please other people.

Canadian Fitness and Lifestyle Research Institute. (2005). Results of the 2000 physical activity monitor. Retrieved from http://www.cflri.ca/eng/provincial_data/pam2000/nunavut.php



Challenges/Barriers

- Nunavut:
 - As many as 65% of Nunavut residents are insufficiently active (1)
 - Over half (56%) of children and youth aged 5-17 are not active enough for optimal growth and development (1)
 - 72% of children aged 5-17 do some physical activity at home, 61% participate in physical education classes at school ... 57% participate in physical activities elsewhere (1)
 - 69% of children usually do homework for part of the time between the end of classes and dinner, and 88% engage in other sedentary activities (4)
 - 36% of children in the North reportedly spend time in organized activities, such as soccer practice or swim classes, between the time they finish school and the time they eat dinner (4)
 - 63% of children spend time in unorganized physical activities, such as bicycling or walking, between the time they finish school and the time they eat dinner (4)
- Sedentary activities (watching television, reading, playing computer or video games; 4)
- Public facilities and program – 36% say they don't meet children's needs very well or at all, 46% use them rarely or not at all (4)
- Private facilities and program – 46% report that these facilities do not meet their children's needs very well or at all. The majority of children in the North (69%) reportedly do not use private facilities and programs very often or at all (4)
- Local parks and outdoor spaces – are available to most Nunavut residents (68%; 5)
- Availability of local parks and outdoor spaces where children can be physically active is lowest in Nunavut (5)

Solutions

- Walk part of the way and driven the rest (3)

Relevant information

- Nunavut:
 - Active commuting among adults – 87% of adults report having walked during the past year to work, school, for errands, or as a means of getting around (Canada Fitness and Lifestyle Research Institute, 2005, 2)
 - Adults in Nunavut are more likely than Canadian adults overall to walk as a means of commuting. They report more days walking than the Canadian average (Canada Fitness and Lifestyle Research Institute, 2005, 2)
 - 48% of children aged 5-17 use entirely active modes to travel to and from school each day (Canada Fitness and Lifestyle Research Institute, 2005, 3)
 - Children typically use active modes to travel to and from school each day (3)
 - In the North as a whole, 36% of children aged 5-17 rely solely on inactive modes of transportation to travel to and from school (3)
 - Children in Nunavut are the least likely of all Canadian children to use entirely motorized modes of commuting to and from school each day (Canada Fitness and Lifestyle Research Institute, 2005, 3)
 - *there are geographical differences in active commuting to and from school*
 - In Nunavut, 38% of children aged 5-17 use a mixed mode, or combination of active and inactive modes of transportation to travel to and from school (Canada Fitness and Lifestyle Research Institute, 2005, 3)

- In the North, 22% of children aged 5-17 reportedly receive physical education classes at school 1-2 days each week. 35% participate 3-4 days a week, 32% receive daily physical education. Very few (11%) children in this age group receive no physical education at all (Canada Fitness and Lifestyle Research Institute, 2005, 3)

Canadian Fitness and Lifestyle Research Institute. (1996). Barriers to physical activity. Progress in Prevention, 4, 1-6.

Challenges/Barriers

- People living in smaller communities ... are more likely than others to report lack of facilities and lack of programs, instructors, and coaches as barriers to physical activity (3)
- Lack of social support is also more of an issue for people living in smaller communities (3)
- Lack of skill, long-term illness or injury, feeling uncomfortable, and lack of transport are other barriers (3)
- Major Barriers (1)
 - Lack of time
 - Lack of energy
 - Lack of motivation
- Moderate Barriers (1)
 - Excessive cost
 - Illness/injury
 - Lack of facilities nearby
 - Feeling uncomfortable
 - Lack of skill
 - Fear of injury
- Minor Barriers (1)
 - Lack of safe places
 - Lack of child care
 - Lack of a partner
 - Insufficient programs
 - Lack of support
 - Lack

Solutions

- Emphasize social linkages, social support and the provision of appropriate, low cost opportunities and facilities for physical activity, especially for younger Canadians living in smaller communities (4)
- Build physical skills, self-efficacy, and self-confidence (4)
- Educate and reassure them about safe ways to be active (4)
- Create a supportive social and physical environment to help the least active build physical skills and self-efficacy for physical activity. Educate them about physical activity, as well as the joys and benefits of a physically active lifestyle (4)

**Centers for Disease Control and Prevention. (2007). Kids walk-to-school.
Retrieved from**



<http://www.cdc.gov/print.do?url=http%3A%2F%2Fwww.cdc.gov%2Fncddphp%2Fdnpa%2Fkidswalk%2F>

Challenges/Barriers

- Distance to school (1)
- Traffic danger (1)
- Adverse weather conditions (1)
- Fear of crimes against children (1)
- Traffic around schools and distance to schools (5)

Solutions

- KidsWalk-to-school program
- Build partnerships with the school, PTA, local police department, department of public works, civic associations, local politicians, and businesses to create an environment that is supportive of walking and bicycling to school safely (1)
- Solution to combat the problem of distance to school is to examine school siting. Bringing back smaller neighborhood schools rather than large facilities built on the outskirts of town (5)
- School siting is a long-term process, [however] an interim solution is to establish meeting places within a mile of school and create Walking School Bus (5)
- Solutions to traffic (5)
 - Enforced speed zones
 - Lowered speed zones
 - Traffic calming
 - Speed humps
 - Increased sidewalk and bike paths to and around school areas
 - Police patrolling
 - School policy change: According to a survey conducted in 1999, 7% of schools have policies that restrict children from walking or biking to school (5)

Eng, J.J., Chu, K.S., Kim, C.M., Dawson, A.S., Carswell, A., & Hepburn, K.E. (2003). A Community-Based Group Exercise Program for Persons with Chronic Stroke. *Medicine and Science in Sports and Exercise*, 35, 1271-1278.

Barriers to Walking Programs:

- “perceptions of excessive exertional demands or the lack of confidence in the ability to perform the exercise are barriers to sustained physical activity” (1275)

Frank, L.D., Saelens, B.E., Powell, K.E., & Chapman, J.E. (2007). Stepping Towards Causation: Do built environments or neighborhood and travel preferences explain physical activity, driving, and obesity? *Social Science and Medicine*, 65, 1898-1914.

Barriers to Walking:

- Neighborhoods with “higher population density, proximity to commercial destinations, and good public transportation” are more likely to walk regularly (1899)
- People will walk more when walking is easy to do (e.g. walkable environment)

Hubsmith, D. (2007). Rural safe routes to school: Diverse community roundtable meeting notes. Safe Routes to School National Partnership. Retrieved from <http://www.saferoutespartnership.org/local/4317/4345>

Challenges/Barriers

- Rural communities typically have no or limited public transportation, walking, or bicycling facilities (1)
- The culture of bicycling and walking is not fostered (2)
- While rural communities have similar barriers to bicycling and walking as in other communities, they often lack the fiscal and staff resources to adequately address these barriers (2)
- In a lot of smaller communities, there is simply not a culture of walking or biking, even for short trips (2)
- Residential areas in rural communities often are a long distance from schools (2)
- There is often a lack of facilities, staff time, and fiscal resources in rural communities (2)
- Volunteer base of parents can be very limited (2)
- Trails being disconnected by property purchases, causing worry about losing connectivity (3)
- Geography in rural areas can sometimes change quickly over just a few years. Many communities lack the resources to keep abreast of the changing environment (4)
- A huge barrier to getting routes to school is safety. In rural areas, often there is no roadway shoulder where the kids can walk or ride (4)
- Only 35% of students live within two miles of schools (4)

Solutions

- Trails or informal paths that link residential areas directly to school sites (2)
- Ensure trails are maintained and new bike/ped infrastructure is created (4)
- It’s important to address school siting issues (location; 4)
- The Texas Bicycle Coalition (TBC; biketexas.org; 2)
 - TBC hired eight outreach coordinators, based in rural towns These outreach were most effective when they first focused efforts in the centers of town, and then involved folks in outlying areas (2)
 - The program began with a kick-off event ... to promote the program and get people excited about it. Having outreach coordinators reach out to satellite communities has been key (2)
 - The coordinators participate in public events, attend public meetings, and are at the table when any group is addressing the issues of health and safety of children (2)
 - TBC also has a complementary bicycle education curriculum, including a resource binder, CD, and training PE teachers (2)
- Safe Routes to Bus Stops

- Based on the same principles as SRTS – like walking school buses, education techniques and banners – to help students get to centralized bus stops (2)
- Goal is to teach people skills they can use any time (3)
- Promotion
 - Use the idea of walking and bicycling to school to promote a walk and bike message. Incorporate other walk/bike encouragement programs, such as trip consolidation, family walking programs, recess, biking in PE, after-school bike clubs, and remoter drop offs for buses (3)
 - It's important to include a safety message and talk to school s about safety (3)
 - Rural schools are also using contests and competitions to promote walking and bicycling (3)
- Working through Trails Committees
- Form a trails committee ... hold public meetings about trail concerns

Kirby, A.M., Lévesque, L., Wabano, V., & Wobertson-Wilson, J. (2007). Perceived Community Environment and Physical Activity Involvement in a Northern-Rural Aboriginal Community. *International Journal of Behavioral Nutrition and Physical Activity*, 63, 1-9.

Barriers to Walking Programs:

- “aesthetics and convenience of access to destinations have been found to be associated with walking” (2)
- “safety has been shown to be associated with walking in women but not in men” (2)
- High levels of obesity could be a barrier to getting participants involved in programs and should be taken into account when designing programs
- Wild animals can be barriers to walking on a community trail
- A lack of comfortable shoes can be a barrier to walking

Solutions:

- “it is clear that people who have access to safe places in which to walk, play, and be active are more likely to be active” (2)
- People are more likely to walk if they have access to “pleasing natural environmental features (e.g., waterfront vistas)” (7)
- Walking in a group rather than alone or fencing in the walking area can help increase safety
- “Aboriginal core values, beliefs and healing practices in physical activity programming will increase Aboriginal people’s adherence and connection to such programs” (7) (e.g. smudging, tobacco bundles, purification ceremonies)

Law, M. Petrenchik, T., King, G., & Hurley, P. (2007). Perceived Environmental Barriers to Recreational, Community, and School Participation for Children and Youth With Physical Disabilities. Archives of Physical Medicine and Rehabilitation, 88, 1636-1642.

Barriers to Walking Programs for Disabled:

- “5 aspects of the environment may influence a child’s participation: (1) products and technology; (2) the natural and built environments; (3) support and relationships; (4) attitudes, values and beliefs; and (5) services systems and policies” (1636)
- There are a number of barriers to participation for children with physical disabilities including “the characteristics (e.g. temperature, terrain, lighting, noise, crowding); design; and accessibility of home, school, and community environments” (1636)
- Other barriers for children with physical disabilities include attitudes towards them and “a lack of social support” (1637)

O’Brien, C., & Gilbert, R. (2010). Guidelines for child-and youth-friendly land-use and transport planning in rural areas. The Centre for Sustainable Transportation, 1-61.

Challenges/Barriers

- No sidewalks (24)
- No paved shoulders along highways
- No bike paths and trails
- Lack of infrastructure makes routes feel unsafe
- Traffic speeds makes routes feel unsafe
- Distances are often too great
- Few interesting facilities nearby such as parks, tennis courts, trails
- Shared use trails (motorized and non-motorized) make them feel unsafe
- Require bike safety training
- No forum where they can express their views and feel confident that their views will be incorporated into community plans
- Habits (some felt they had developed a lazy habit of using cars to travel to destinations within walking or cycling distance) (24)
- Living in rural and remote areas [can mean you] are less likely to have access to a range of public and other types of transport ... some communities have no form of public or private transportation (10)
- No late buses (10)
- Highways are unwelcoming and generally unsafe routes for students to take to school (13)
- Lack of infrastructure in towns and rural areas presents a significant barrier for young people and adults to safely walk, cycle or engage in other active modes of travel (22)
- Concern in rural areas is from wild and domesticated animals (28)
- Darkness along walking routes (29)

Solutions



- Build sidewalks along routes where youth and others regularly travel (24)
- Pave shoulders on highways and mark shoulder clearly with yellow line
- Repair potholes in roads
- Make bike paths and trails a priority
- Separate motorized and non-motorized trails
- Repair damaged equipment in parks and create recreation facilities in communities
- Offer bike training
- Establish youth-led programs that encourage physical activity and active transportations (e.g., youth running, hiking and cycling groups)
- Bike racks at schools and more school support for active transportations
- Access to recreation facilities in schools after hours
- Establish forums for youth to provide their views on community plans
- Purchase bicycles for community use
- More community events that encourage active transportation – closing roads to motorized vehicles at specified times (24)
- Enhance accessibility to pedestrians and cyclists ... in small towns, there are often 'hubs' that provide a concentration of destinations including schools, shops, community centers, businesses and places of worship (12)
- If school ... and stores are near residences, the result may be more walking and bicycling (12)
- Provisions of sidewalks, trails, bicycle lanes and paths (12)
- Increase the amount of active transport ... by young people ... and reduce their travel by car (21)
- Pay greater attention to infrastructure in school zones and the value of walking school bus programs (22)
- Youth prefer sidewalks that link schools to bus terminals, recreation centers and shopping areas (22)
- Active transportation between communities can be facilitated with well connected trail systems (22)
- Walking trail construction, enhancement, and/or promotion interventions represent relatively inexpensive and cost-effect strategies to promote physical activity in rural communities (22)
- Identify where children and youth want to go or need to go and, to the extent possible, provide ways of getting there by foot (27)
- Separate sidewalks used by children and youth from heavily trafficked roads (29)
- Innovative ways to establish walking school bus programs ... [where] bussed students may be let off the bus at a designated site 1-2 km from the school and then supervise to walk along a safe route for the remaining distance. Alternately, a walking school bus may be arranged to meet at the site where students will be picked up (41)

Relevant information

- Growing body of research related to physical activity and the built environment, though there are few studies that have focused on children and youth in rural communities (O'Brien & Gilbert, 2010, 15)
- Adolescents are more likely than children to commute to school using sedentary forms of transport. Rural children and youth are less likely to actively commute to school (15)
- A US study of rural 5th grade children recommended that a potential means for increasing physical activity of rural children and youth is to facilitate access to physical outlets (15)

- Rural youth appear to have greater risk related to obesity and physical activity (15)
- A US study found that adolescents living in sprawling counties were more likely to be overweight or at risk of overweight than those living in compact counties (15)
- Walking is most suitable for journeys of less than 2 kilometers ... while bicycling can be appropriate for journeys up to 5 kilometers and even longer (O'Brien & Gilbert, 2010, 30)

Sallis, J.F., & GlanzSource, K. (2006). The Role of Built Environments in Physical Activity, Eating and Obesity in Childhood. *Childhood Obesity*, 16, 89-108.

Barriers to Walking:

- “Buildings, transportation infrastructure, elements of land use and community design, and recreational facilities, such as parks and trails, all affect citizens' physical activity” (91)
- “Perceptions of heavy traffic, a lack of public transit, a lack of street-crossing aids, the need to cross several roads, and a lack of nearby recreational facilities were all linked to lower rates of active transportation” (93)
- “Low-walkable suburban development patterns, such as the lack of sidewalks, long distances to schools, and the need to cross busy streets with fast-moving traffic, appear to create barriers to active commuting to school” (93-4)
- “the development of safe sidewalks, crosswalks, and bike lanes will not increase active commuting among children whose homes are too distant from their schools or who are driven to school to suit their parents' work schedules” (94)

Solutions:

- “more children walk to school in neighborhoods with sidewalks” (94)
- “Neighborhoods that have community gardens can promote both physical activity and healthful eating” (100)
- “Combining physical improvements to enhance the safety of routes to school with activities that promote walking and cycling appears to increase active commuting to school” (101)
- “Educational programs, promotional activities, incentives, and policies will all be necessary to support the physical changes” (102)

Simon, P.A., & Fielding, J.E. (2009). Establishing Best Practices for Changing the Built Environment to Promote Physical Activity. *American Journal of Preventive Medicine*, 37, S448-S449.

Solutions to Walking:

- Safety can be a major barrier to walking – ways to improve safety include “a walking school bus program, establishment of a safety committee, and several safety summits” (S449)
- Improved lighting can increase physical activity
- The impact of walking programs can be increased with promotional campaigns, improvements to the environment, and if done in conjunctions with policy changes
- Programs need to be tailored to the “unique circumstances of each community” (S449)

Transport Canada. (2010). Amenities and programs that encourage active transportation in all seasons. Retrieved from <http://www.tc.gc.ca/eng/programs/environment-utsp-allseasontransportation-222.htm>

Challenges/Barriers

- Inclement weather (2)
- Lack of physical infrastructure such as bicycle lanes, or infrastructure that is not well maintained in all seasons (2)
- Lack of knowledge of pathways, trails or bicycle lanes (2)
- Safety concerns and time pressures (2)
- Lack of knowledge about safe, fast or convenient routes such as trails, bicycle paths, transit routes (2)
- Inadequate skills or a lack of self-confidence to use active transportation such as cycling (2)
- Poorly designed or maintained transportation infrastructure (2)
- Neighbourhood design that favours cars over other modes of transportation (2)
- Inadequate or non-existent inter-modal connections, e.g., bicycle racks on buses, trains or subways (2)
- Seasonal and/or weather-related barriers (2)
- Inadequate maintenance of sidewalks, bicycle lanes and trails (2)
- Lack of cycling skills and knowledge (e.g., dressing for different types of weather; 3)
- Fear of injury in winter or in other inclement weather conditions (3)
- Sidewalks not adequately cleared of snow or, in some cases, not plowed at all (6)
- The sun rises later and sets earlier in the north (7)

Solutions

- Since the sun rises later and sets earlier in the north, a few northern schools changed the time of the walk so that children weren't walking in the dark (7)
- WalkSMART (6)
 - Year round program
 - Offers incentives that make walking easier, safer and more enjoyable
 - Participants receive a pedometer so they can track their progress
 - Each month, participants log their distances and are then eligible for prize drawings, which include practical items such as umbrellas for rainy days or blinking lights for better visibility

Unknown. (Unknown). Addressing barriers to physical activity. Retrieved from www.mpeta.ca/documents/Resources/PowerPoint/ModuleBLesson4.ppt

Challenges/Barriers to Physical Activity

- Insufficient time (2)
- Inconvenience
- Lack of self-motivation

- Non-enjoyment
- Boredom
- Lack of confidence
- Fear of being injured or having been injured recently
- Lack of self-management skills
- Lack of encouragement, support, or companionship
- Non-availability (2)
- Top 3 barriers are: time, energy, and motivation (3)
- Cost (4)
- Facilities
- Illness or injury
- Transportation
- Partner issues
- Skill
- Safety considerations
- Child care
- Uneasiness with change 94)
- Environment in which we live has a great influence on our level of physical activity (5)
- Accessibility of walking paths, cycling trails, and recreation facilities
- Traffic
- Availability of public transportation
- Crime
- Pollution
- Social environment, such as support from family and friends
- Community spirit (5)

Solutions

- It is possible to make changes in our environment through campaigns to support active transportation, legislation for safer communities, and the creation of new recreation facilities (5)
- Identify the available time slots or create time slots during which you are willing to give up a sedentary activity (watching television), Monitor daily activities for one week. Identify at least three 30-minute time slots you could use for physical activity (7)
- Add physical activity to your daily routine (walk or ride to school or work or shopping; 7)
- Make time for physical activity (7)
- Invite friends and family members to exercise with you. Plan social activities involving exercise (7)
- Plan ahead and make the commitment. Make physical activity a regular part of your daily or weekly schedule and write it on your calendar (7)

Unknown. (Unknown). Walking and bicycling to school: Community presentation lesson plan.

Challenges/Barriers

- No sidewalks, no safe crossings, too far from the school to walk or cycle (5)



- Perceptions of crime, parent concerns of child abductions (5)
time and convenience
 - More convenient to drop their child off at school on their way to work (5)

Solutions

- Walking or bicycling to school (8):
 - 1 day kick off event, International Walk to School Day in October
 - 1 time per week like Walking Wednesdays
 - Walking school bus where kids walk daily in groups led by adults
 - Safe routes to school program to encourage communities to identify barriers and create safe routes to school

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