Aboriginal Children's Sport Participation in Canada

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Abstract

Physical activity can be viewed as a proactive health promotion strategy in terms of the relative benefits incurred for both physical and mental health. The purpose of this paper was to examine sport participation as one aspect of physical activity for Aboriginal children and to provide a comparison of Aboriginal children in Canada who do and do not participate in sport outside of school. Using a socio-ecological approach, various factors were explored as potential correlates of sport behaviour. Findings from the *Aboriginal Peoples Survey 2001* (Children's component), suggest that 65% of Aboriginal children were reported to engage in sport at least once per week. Results indicated that Aboriginal children who participate in sport were more likely to be male, have more educated parents, and come from two-parent households. In addition, sports participation was more likely if the child was living off-reserve and if the child was Métis or Inuit as compared to First Nations.[1] The findings suggest that Aboriginal children are actively engaging in sport, although demographic, environmental, or cultural factors may affect rates of participation.

Introduction

The health benefits of physical activity are well-documented. For children specifically, these benefits include the provision of opportunities for peer interaction, promotion of physical health (see Bailey, 1999; Penedo and Dahn, 2005), and positive mental health (e.g., Biddle, 1995; McAuley et al., 2000). However, little is known about patterns of physical activity for Aboriginal children in Canada who may have decreased access to facilities or programs or who may share with their community a different perspective on physical activity (Thompson et al., 2000). In addition, physical activity may be particularly beneficial for Aboriginal peoples for whom rates of diabetes and obesity are a specific concern (Macaulay et al., 1997). Childhood is a pertinent age-group to study within the Aboriginal population given that children represent a large proportion of Aboriginal people; in the 2001 Census, one-third of Aboriginal people in Canada were 14 years and under (Statistics Canada, 2003a). In addition, behaviours established in childhood and adolescence can have a lasting impact on life-long health. Thus, the purpose of this paper was

1 Respondents self-identified as "North American Indian"; however, the term "First Nations" is used throughout this document.

to provide a description of Aboriginal children in Canada who do or do not engage in sport as one means of physical activity engagement.

Sport is a physical activity which is differentiated from leisure time activities and exercise by its emphasis on competition (Bouchard et al., 2007). Sport is also the most common means by which children engage in physical activity (Taylor et al., 1999). Opportunities for sport occur at school in physical education classes and recess time, after school with or without peers, or in organized leagues through community centres or parks. Although Mills (1998) highlighted the importance of sport and recreation in the lives of Aboriginal children and youth, sport participation may be more or less accessible either due to environmental conditions, financial constraints, or aspects of the child's culture or background. Moreover, there is very little empirical research concerning Aboriginal children's participation in sport specifically.

Benefits of Sport Participation for Aboriginal Peoples

Previous research has shown that Aboriginal People have particular health risks including elevated obesity levels (Denny et al., 2005; Tremblay et al., 2005) and higher rates of diabetes (Campbell, 2002; Reading, 2003). Changes in the lifestyle of Aboriginal Peoples in Canada, including differences in diet and decreased physical activity levels, may partially explain the rapid rise in health care problems (Coble and Rhodes, 2006; Retnakaran et al., 2005). However, physical activity can be considered as an intervention strategy to deal with such health impairments. That is, by increasing physical activity levels, the rise in obesity and diabetes may be particularly impacted (Coble and Rhodes, 2006).

Physical activity and sedentary behaviour, which includes such behaviours as television and videogame usage, have been associated with physical health, more specifically with obesity. Research with both Aboriginal adults (Fitzgerald et al., 1997; Coble and Rhodes, 2006) and children (Tremblay and Willms, 2003) has shown a positive effect of physical activity on obesity, which in turn has an effect on other health conditions such as diabetes and cardiovascular disease in adulthood (Rabkin et al., 1997). In contrast, less active children who watch television or play videogames, have been shown to have higher levels of obesity (Anderson et al., 1998; Tremblay and Willms, 2003). Ambiguity exists in the literature with respect to the relation between physical activity and inactivity, with some studies suggesting that higher levels of activity are associated with lower level of inactivity, although other studies show no such relation (Sallis et al., 2000). However, what is known

is that greater physical activity and less inactivity are associated with lower obesity levels.

Turning to mental health benefits, participation in physical activity has demonstrated benefits for both adults and children alike. McDonald and Hodgson's (1991) review suggested that individuals who participate in physical activity generally see an improvement in self-esteem, mood, and anxiety. For children and adolescents, research is available which addresses sport participation specifically. Children and adolescents who participate in sport have been shown to have increased social status, particularly for boys (Chase and Dummer, 1992), decreased loneliness (Page et al., 1992), elevated self-esteem (Jackson and Marsh, 1986), and decreased anxiety (Findlay and Coplan, 2007; Kirkcaldy et al., 2002). Harrison and Narayan (2003) found that adolescents who participated in sports had higher odds of liking school and feeling good about themselves, and lower odds of feeling nervous or worried and of suicidal thoughts. Thus, sport participation can also be associated with positive mental health.

Specific to Aboriginal youth, sport participation has been tied to positive self-esteem and decreased rates of smoking behaviour. In one of the few studies of Aboriginal children's sport, Kickett-Tucker (1999) found that participation in school team sports was positively related to self-concept for 10 to 12 year old Australian Aboriginal youth. It was suggested that Aboriginal role models like Olympic athlete Cathy Freeman provided ethnic identification and pride, and that sport participation was tied to a sense of Aboriginal identity. In terms of physical health, Aboriginal youth who participate in sport have been shown to be less likely to smoke than their non-active peers (Reading, 2003). This is particularly important given that Aboriginal youth have been found to have a higher prevalence rate of smoking than the Canadian national average (Retnakaran et al., 2005). Therefore, participation in sport in particular may be especially advantageous to Aboriginal youth both in terms of the impact on mental health and by decreasing risk behaviours such as smoking.

Correlates of Physical Activity

While rates of participation are of interest in the current study, predictors of sport participation have implications for targeting intervention programs to increase physical activity or sports participation. Social-ecological theory suggests that social and environmental contexts are key elements in predicting physical activity participation (Sallis and Owen, 1999; Stokols, 1996). Rather than taking an individualistic approach, the social ecological

framework suggests that the individual is only one component in determining health-related behaviours and that behaviour is determined by social and environmental correlates. These correlates may include socioeconomic status, education level, community resources, and culturally relevant social support or social norms (Fleury and Lee, 2006). As such, studies of health-related behaviour, including physical activity and sport, should consider various social and environmental factors which may enable or inhibit individuals from participating.

A narrative exploration of the literature by Coble and Rhodes (2006) confirmed that some individual level factors were associated with physical activity participation, in addition to important environmental correlates. Age was negatively associated with participation, therefore, older Aboriginal adults participate less frequently. Mixed results were found for education and employment, suggesting that level of education and employment status are not consistent predictors of physical activity in adults. Moreover, males were found to be more active than females, although some caution should be exercised in interpreting this finding as several large sample studies have shown no gender differences (e.g., Denny et al., 2005).

Turning to the environmental correlates of physical activity, Coble and Rhodes (2006) did not find a significant association between physical activity and the physical environment (e.g., safety, bad weather). That is, Aboriginal people were not more or less likely to participate based on their physical environment. No research was reviewed regarding the relation between physical activity and sedentary or inactive behaviours. However, the *social* environment was positively associated with physical activity; persons with social support such as knowing others who exercise or having active neighbours were more likely to engage in physical activity themselves. Thus, environment had an important impact on physical activity participation, yet relatively little is known regarding the correlates of Aboriginal children's sport participation.

Another demonstration of the importance of the environment on physical activity or sport is the role that *changes* in the environment (i.e., interventions) can have on children's participation. One such example is the Kahnawake Schools Diabetes Prevention Project (KSDPP), a community-based project to decrease the prevalence of diabetes in an Aboriginal community by improving eating and physical habits and increasing diabetes awareness (Macaulay et al., 1997). Paradis and colleagues (2005) revealed that obesity and physical fitness were not significantly improved in the intervention community; however, benefits of participation included an increase in the average

number of physical activities. Of particular note is the high degree of support for the program in the Aboriginal community, suggesting that future research evaluate this and other programs' success rates in terms of using environmental changes to physical activity levels.

The Current Study — Aboriginal Children's Sport Participation in Canada

Given the link between physical activity and sport participation and children's health, it was of interest to examine the rate of Aboriginal children's sport participation as well as predictors of participation in sport. Specifically, familial and environmental variables were of interest given that previous researchers have suggested that ecological factors may influence the physical activity and health of Aboriginal people (Adelson, 2005; Campbell, 2002). Data from the 2001 *Aboriginal Peoples Survey* (Children's component) was examined to (a) explore rates of participation, (b) compare participants and non-participants in terms of demographic, environmental, and cultural factors such as Aboriginal identity, and (c) examine the association between sports participation and participation in sedentary activities such as television viewing and videogame usage.

Methods

In 2001 (October through December), following discussions with national Aboriginal organizations and government sectors (federal, provincial, and territorial), Statistics Canada conducted the *Aboriginal Peoples Survey* (APS) to gain insight into the social and economic conditions of First Nations peoples, Métis, and Inuit in Canada. The APS is a post-censal survey, meaning that participants were selected based on self-identification as being an Aboriginal person or reporting Aboriginal ancestry in the 2001 Census. In the current study, participants were only those individuals who reported Aboriginal identity and not solely Aboriginal ancestry. Participation in the APS was voluntary. Participants were advised prior to participating in a telephone or personal interview that Census information would be added to the data collected from the interview and that all information was confidential.

Sample

The target population consisted of residents in all 10 provinces and 3 territories, including those in First Nation communities, Métis settlements, Inuit communities, and both urban centres and rural areas. However, due to

abstention by some communities, costs, and the small size and location of several communities, the final sampling frame did not include all communities across Canada. The sample included 219 communities; a complete list of communities is available from the APS 2001 User's Guide (Statistics Canada, 2003b). A significant result of not sampling from all communities is that aggregate estimates of the on-reserve population are representative only of the participating communities.[2] As is typical with survey samples, each respondent represents other persons in the population; therefore, weighting is applied to the statistical analyses. Initial weights are adjusted to account for non-response and to eliminate discrepancies between key characteristics of the sample and the target population.

The children's component of the *Aboriginal Peoples Survey* was designed for children ages 0 to 14; the person most knowledgeable (PMK) about the child responded to the questionnaire on their behalf (82% of the time, this was the biological mother or father, 5% grandparent, 3% aunt or uncle, 10% other, e.g., adoptive parent, sibling, step parent). The total sample size for the children's component of the APS with Aboriginal identity was 33,623 children.

Measures

Demographic questions of interest included child sex and age, the latter being grouped into conceptual phases of early childhood (0–4 years), mid-

2 Caution should be exercised in generalizing the characteristics of the reserves that participated in APS to the entire on-reserve population in Canada. The sample selection of reserve communities for APS was not designed to be representative of the entire on-reserve population. There was no randomness in the selection process of the reserves and no randomness in the reserves that refused to participate. As a result, any aggregation of APS reserve data is only representative of the reserves that participated in APS, and cannot be considered representative of the total on-reserve population. However, the data is available at the community level for each reserve community that was selected and participated in APS.

The sampling strategy for APS that focused on the large reserve communities covered 44% of the entire on-reserve population. In an attempt to evaluate how comparable the data collected on the APS-selected reserves are to the entire on-reserve population, a small study was carried out. Socio-economic characteristics of reserves that participated in the 2001 APS were compared to the same characteristics of the total reserve population from the 2001 Census. The variables used in the comparison were as follows: sex, age (5-year age groups), highest level of schooling, labour force activity, mobility status (one year), mother tongue, and housing. While the differences in distributions are relatively small for most of the characteristics measured in this study with the exception of the mother tongue variable, this does not mean that similar differences would be observed for other characteristics. Equally, it does not cover all characteristics measured in APS, such as information about Aboriginal culture, and health.

dle childhood (5–11 years), and the teenage years (12–14 years). PMK highest level of education was collapsed into three groups: less than high school education, high school diploma, and more than high school. The PMK also reported whether the child lived with one or two parents, the number of siblings in the home, and whether they lived in an urban, rural, or Arctic area. Urban areas are represented by a population of greater than 1000 persons. Finally, the PMK reported the child's Aboriginal identity (First Nations, Métis, Inuit, single or multiple origin), and whether the family lived on or off reserve. Groups were created for First Nations, Métis and Inuit single origin, and a combined First Nations and Métis group.[3] Since the APS was a post-censal survey, information regarding household income was added from the 2001 Canadian Census.

Children's sport participation was measured by the question, "Outside of school hours, how often does _____ play sports (including taking lessons)." Response options included: never, less than once per week, one to three times per week, or 4 or more times per week; however, data was collapsed to represent two categories: participated at least once per week or more versus non-participation or participation less than once per week (non-participants). Parents were also asked to estimate the number of hours per day their child watched television or played videogames. Further information regarding questionnaire content is available from Statistics Canada (Statistics Canada, 2003b).

Data Analysis

Data were examined to compare (using a chi-square test) the proportion of children who were/were not participating in sports based on sex, age, parent education, dual/single parent, urban/rural/Arctic, cultural identity, and living on or off reserve. The latter comparison was for First Nations children only. Previous literature suggests that boys and girls participate in sport at different rates and that declines in sport participation vary by sex (van Mechelen et al., 2000); therefore, a sex by age interaction was examined for sports participants only. Finally, means (t) tests were performed to examine whether sports participants as compared to non-participants demonstrated any differences based on income, number of siblings, and television and videogame usage. Analyses were conducted using SAS version 9.1. Bootstrap

3 Although some individuals did identify as First Nations and Inuit or Inuit and Métis, these groups were too small to conduct separate analysis (n=44 and n=29 respectively).

weights were applied to account for the underestimation of standard errors due to the complex survey design (Rust and Rao, 1996).

Results

In general, the majority of Aboriginal children were reported to have participated in sport outside of school hours at least once per week (65%). Specifically, 23% of children were reported to never participate, 12% participated less than once per week, 39% participated 1 to 3 times per week, and 26% engaged in some type of sports 4 or more times per week. Participants were more likely to be boys than girls (see Table 1). In terms of age, an interesting trend was shown whereby children aged 5–11 were more likely to participate in sport than were youth (ages 12–14) and younger children (0–4). For sports participants, a sex by age interaction did not show any significant differences suggesting that the decline in sports participation for youth was similar for both boys and girls.

In terms of family factors, Aboriginal children of parents with higher levels of education and who lived with two parents (as compared to one) were more likely to engage in sport (see Table 1). A comparison of means indicated that children who participated in sports were of families with higher reported incomes than those who did not participate in sports (see Table 2). In addition, children who participated in sports had fewer siblings than did children who did not participate in sports.

Turning to geographic and identity correlates, no differences in rates of participation were found for children living in urban, rural, or Arctic regions (Table 1). However, Métis or Inuit children had higher rates of participation than did First Nations or the combined First Nations and Métis group. In addition, First Nations children living off-reserve had higher rates of participation than did children living on-reserve.[4]

The final set of comparisons revealed an association between sport and children's participation in other activities. As shown in Table 2, sports participants were found to watch fewer hours of television than did non-participants. However, children who participated in sport also spent *more* time playing videogames than did non-sports participants.

4 The on- and off-reserve comparison was restricted to children who identified as First Nations only. In Canada, most people living on-reserve self-identify as First Nations. Thus, to create an equivalent denominator, those living off-reserve were also restricted to First Nations only.

Table 1. Sport Participation in Aboriginal Children and Youth

	n	*% who participate at least once per week*	*% who do not participate at least once per week*	χ^2	*p*
Child Demographics					
Sex					
Male	16866	72.85	27.15	275.11	<.0001
Female	16757	62.93	37.07		
Age					
0–4 (Young child)	10480	53.07	46.93	208.03	<.0001
5–11 (Child)	16610	69.63	30.37		
12–14 (Youth)	6526	67.58	26.33		
Family Demographics					
Parental Education					
Less than high school	12238	61.86	38.14	93.90	<.0001
High school diploma	8903	68.11	31.89		
More than high school diploma	1666	72.20	27.80		
Family structure					
Single-parent household	9858	63.10	36.90	112.83	<.0001
Two parent household	20814	70.15	29.85		
Urban vs rural					
Urban	20216	67.76	32.24	6.32	ns
Rural	11557	67.52	32.48		
Arctic	1850	70.95	29.05		
Aboriginal Identity					
First Nations	19451	65.07	34.93	109.56	<.0001
Métis	10248	71.58	28.42		
Inuit	1931	72.10	27.90		
First Nations and Métis	1250	66.97	33.03		
Reserve vs off-reserve[a]					
On reserve	4593	62.06	37.94	18.13	<.0001
Off reserve	14858	66.05	33.95		

Note: Bootstrapping techniques were applied to account for the complex survey design.

[a] Reserve/off-reserve analysis was limited to First Nations only.

Table 2. Comparison of means based on sport participation (at least once per week)

		Participants		*Non-participants*			
	n	*M*	*SD*	*M*	*SD*	*t*	*p*
Income	33623	44,496	36,752	34,645	27,351	-21.36	<.0001
Number of siblings	27224	2.67	2.21	2.89	2.31	6.18	<.0001
Hours of television	23458	2.28	1.34	2.56	1.34	14.68	<.0001
Hours playing videogames	23244	1.17	1.24	1.05	1.16	-7.10	<.01

Note: Bootstrapping techniques were applied to account for the complex survey design.

Discussion

The purpose of the current study was to examine rates of Aboriginal children's sport participation as well as to investigate correlates of participation. The majority of Aboriginal children were reported to participate in sport (65%). This rate is similar to the rate for Canadian children in general (64% of 4–14 year olds, as determined from the National Longitudinal Survey of Children and Youth, 2000/01). These findings suggest that Aboriginal children are equally likely to participate in sports as are other Canadian children. However, 35% of Aboriginal children were not participating in sport at least once per week, which may have implications for health and well-being.

Despite the benefits of sport participation for children, some Aboriginal children and youth are less likely to participate. From the results presented in Table 1, it would appear that adolescents and girls are most at-risk for non-participation. Not unlike their non-Aboriginal peers (Thompson et al., 2005), it would appear that as children get older, they are less likely to engage in sport. Adolescence is a time wherein individuals begin to assert autonomy in their decision making and make life decisions (Shaffer et al., 2005). This is also a time when life-long habits can be formed, which includes whether or not the individual will chose to engage in sport on a regular basis, be that for health/fitness or purely for enjoyment (Centre for Research in Girls and Women in Sport, 1997). Thus, a decline in participation at this stage is particularly problematic since it may be associated with increased risk to health over the life course. Sex differences in sport participation suggest that Aboriginal girls are less likely to engage in sport. While the results parallel findings for non-Aboriginal girls versus boys (Sallis et al., 2000), the findings highlight the importance of promoting participation for girls as a strategy for lifelong health. Further investigations are warranted to examine whether girls are less likely to engage in all physical activity or just sport in particular.

As predicted by the socio-ecological approach (Sallis and Owen, 1999), social and environmental factors were found to impact Aboriginal children's participation rates. For instance, children who were participating in sport were from more affluent families and had parents with higher levels of education. These results are not surprising given that educated parents may be more likely to be aware of the benefits of sport. Indeed, parental support, which includes transporting, observing, and encouraging the child, has been shown to be significantly associated with children's physical activity (Ornelas et al., 2007; Trost et al., 2003). In addition, children who lived with both

parents and who had fewer siblings were more likely to be participating in sport. Shared care-giving, especially in large families, may facilitate time available and travel requirements related to children's sports participation. That is, dual parents or families with fewer children are more likely to have the financial and time resources to permit participation in sport (Harrison and Narayan, 2003). Children from larger families may also have other responsibilities such as child minding and household chores leaving less time available for participation in sport (Bianchi and Robinson, 1997).

With respect to geographic differences, our results suggest no differences in sport participation between Aboriginal children who live in urban, rural, and Arctic regions. These findings confirm those of Wilcox and colleagues (2000) who found that American Aboriginal women living in urban as compared to rural areas did not significantly differ in terms of the proportion of the population engaging in regular physical activity. The results suggest that children in urban areas have greater access to community facilities (Stamm and Lamprecht, 2005), which facilitates participation. Children living in rural or remote areas may not have opportunities to participate in a broad array of physical activities (Skinner et al., 2006); however, the current study demonstrates that children in rural, urban, and Arctic areas participate at a similar level overall.

Interesting results were found with respect to Aboriginal identity. Specifically, children living off-reserve had higher rates of sports participation than did children living on-reserve. Reserves are located both near urban centers and in rural and remote communities; however, further research needs to explore potential factors that may influence participation both on reserves and in other communities. The results of this study should be interpreted with caution given that the on/off reserve analysis was restricted to First Nations children. In addition, the on-reserve results can only be generalized to those communities who participated in the APS.

The current study also revealed that Métis and Inuit children appear to have higher rates of sports participation than do First Nations children and those who identified as both First Nations and Métis. Qualitative research could examine these differences since actual rates of sport participation may vary based on differences in the very definition of sport. That is, activities such as hunting, snowshoeing and lacrosse, which are distinct activities tied to certain Aboriginal groups or cultures (Poulter, 2005), may not be called "sport" and thus would not be captured in the current study. It is also possible that economic, environmental, or social conditions specific to First Nations,

Métis, or Inuit differ, although further research is necessary to gain an understanding of any potential differences. These broadband "groups" have previously been argued to differ in terms of history, geographic location, general socioeconomic conditions, and intergovernmental relations (Health Council of Canada, 2004), and the impact of these differences on sport participation warrants further research.

In their ethnographic description of the meaning of physical activity for Aboriginal people, Thompson and colleagues (2000: 724) argued that "physical activity is embedded in a complex web of meanings that tie people to their family and larger Aboriginal community." They suggest that physical activity and sport represent different facets of Aboriginal life, each with its own meaning and value. For instance, in their ethnographic study it was suggested that exercising solely to maintain good health may be considered shameful and self-serving to some Aboriginal people due to an individualistic, versus collectivist, focus. However, sport participation was highly valued as the player was considered to be a representative of the larger Aboriginal community (Thompson et al., 2000). Thus, differences in community and cultural values should be considered when initiatives to increase children's health via physical activity are developed.

It was worthy to note that children who participated in sport also watched fewer hours of television per day. Additional evidence suggests that children who engaged in sports were more likely to participate in other activities such as music, clubs, and other community endeavors (Findlay and Kohen, forthcoming). While further research on these types of activities is necessary, it may be that children who participate in sport at least once per week are engaged in general; that is, they are also involved in other activities in their communities, including sport, cultural activities, leisure time games, etc. Multiple factors may be at play; these children may (a) have emotionally or financially supportive parents who may encourage activity in various domains and/or have the resources to support participation; (b) have certain personality traits (e.g., extroverted) or gross motor skills that are conducive to being involved in sports; or (c) live within communities that provide multiple opportunities such as community centers, organized leagues, and programs. The current data do not allow for a further examination of these possibilities; however, future research might investigate other enabling, predisposing, and reinforcing factors facilitating participation in various Aboriginal communities.

Finally, the somewhat surprising finding that children who participated in sport reported a greater number of daily hours playing videogames may be related to income. Opportunity to play videogames is constrained by being able to purchase the equipment, and those families with sufficient income to purchase videogames may also be able to afford participation in organized activities (Tremblay and Willms, 2003). It is also possible that children who enjoy sports are playing videogames with a sports-context, that is, they are using videogames as an alternative outlet for sports "activities." For instance, videogames based on hockey and football may be particularly popular among children who play sports on a regular basis.

Implications

Findings from the current study have implications in terms of recommendations for programs aimed at increasing sport participation in Aboriginal children. For instance, providing opportunities in sports that are particularly targeted toward girls may promote girls' participation rate. Goran and colleagues (1998) suggested that sports participation may be less socially desirable for girls as compared to boys. In addition, making low-cost programs available via community centres or infrastructure that minimizes the cost for parents creates opportunities for children from low-income families. Partnerships with local school boards increase the availability of facilities, such as gymnasiums, which already exist in local schools but may be currently inaccessible after school hours. Projects targeted at sports participation could also build or improve facilities, provide coaching bursaries or incentives, and create competitions or leagues. In addition, Aboriginal children living in remote communities may need support for travel to communities where more resources are available. Finally, support or encouragement of Aboriginal coaches would foster greater organized sports opportunities for Aboriginal children. Communities can implement strategies to increase the likelihood of participation by targeting specific groups such as females, youth of lower incomes, and older youth. Such strategies should focus on the social and environmental barriers which can be attributed to participation (Sallis and Owen, 1999, Stokols, 1996).

This study makes a substantial contribution to the literature. It is the first to our knowledge to examine sport participation using a nationally representative dataset of Aboriginal children (although some caution should be taken regarding the on-reserve population). In addition, this large sample includes Métis, Inuit, and First Nation children living both on- and off-reserve. This

information was largely used to focus on between group comparisons and to examine a variety of socio-demographic correlates of sports participation.

However, certain limitations of the current study should be noted. The measure of physical activity reported in the APS is limited in that it relied on parental report and was based on a single question regarding sport participation. Future research might consider a more detailed measure of sport or of physical activity in general which should include activity type, duration, and frequency. Future research might also collect information from multiple sources, including parents, teachers, or self-report, in particular for youth. Previous researchers have suggested that self-report provides a more accurate representation of sports participation for children over the age of 10 (Ekelund et al., 2004).

In addition, physical activity is a dynamic and complex behaviour which may vary by season (e.g., winter versus summer activities) and by the respondent's perception of what constitutes being physically active. This is problematic when studying Aboriginal groups for whom physical activity may have alternative definitions or meanings (Canadian Heritage, 2005). For instance, researchers and individuals alike differ in opinion on whether walking constitutes a mode of transportation or a physical activity. In the current paper, we consider sport participation specifically and not general physical activity; however, definitional issues need to be considered.

The final limitation pertains to the APS 2001 data specifically and response bias issues. As mentioned previously, some communities declined participation, or were not sampled due to remoteness or small community size. Generalizability is limited to those communities for which data is available. It is possible that communities not included differ in ways that are important to understand when considering the relationship between environmental determinants and children's sport participation. For instance, children from small or remote communities may be less likely to have opportunities for sports participation. Therefore, some caution should be taken when generalizing the results. In addition, a Pan-Aboriginal approach should be avoided when interpreting the current findings as they may be more or less applicable to specific communities. Opportunities or barriers may exist at the community level only, and thus recommendations or intervention strategies may only be relevant in that domain.

The current study was intended to provide a profile of sport participation for Aboriginal children in Canada. With this, it is hoped that issues have been highlighted as impetus for future studies of Aboriginal children, in par-

ticular with respect to various predictors of health of which sports participation is only one. In terms of future research directions, both quantitative and qualitative research is necessary. For instance, qualitative research would allow for an in-depth examination of barriers to sport or physical activity, motivation for participation, and issues of access. In addition, longitudinal study is necessary for an examination of patterns of sport or physical activity participation over time as well as the impact of participation on long-term health outcomes.

Finally, future research is needed to further investigate other correlates of physical activity and/or sport for Aboriginal children in general and at the community level. Each culture has its own history and background which may relate to the norms and values within each individual Aboriginal community (Frideres and Gadacz, 2005). For instance, in the current study, comparisons were made for First Nations, Inuit, and Métis children; however, it would also be of interest to examine differences by language or by cultural area. Aboriginal peoples are characterized more by cultural complexity than by sameness, as would be implied by making broad-band statements about Aboriginal people in general (McMillan and Yellowhorn, 2004). Thus, whilst the current study paints a picture of Aboriginal children's sport participation in general, further research is required to understand the complexity and richness of the unique cultural aspects and community differences that may exist.

Conclusion

Physical activity can be considered a means of preventative care for long-term health. As such, opportunities for physical activity such as sport should be encouraged and action to promote physical activity is a necessary part of lifelong health habits. While 65% of Aboriginal children were found to participate in sport at least once per week, participation was found to be influenced by sex, age, family demographics, and Aboriginal identity. These correlates should be taken into consideration not only for future research, but also with respect to policy recommendations. Programs targeting girls, adolescents, and children of less educated and single parents may be particularly important for increased sports participation in Aboriginal children. However, one must be cautious in generalizing the current results to all Aboriginal children. Future studies are needed to examine the role of culture and sport for Aboriginal people, in particular with respect to the definition of sport; individual communities and their value toward sport; and the unique and di-

verse aspects of Aboriginal daily life which impact physical activity and sport participation.

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