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School-Based Physical Activity Opportunities: Perceptions of Elementary School Parents, Teachers, and Administrators

Les occasions de pratique d'activité physique à l'école: Perceptions des parents, des enseignants et des gestionnaires de niveau élémentaire

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The aim of this paper is to examine the perceptions of elementary school parents, teachers, and administrators concerning access to and opportunities for physical activity within school environments. Participants from ten public schools in western Canada completed a modified version of a physical activity school settings survey. Results indicated agreement around the adequate use of the built environment and parental involvement in connection with the promotion of school-based physical activity. However, when asked about the effectiveness of school policies and practices associated with opportunities for physical activity, mean group scores of were significantly different ($F(2, 34) = 12.54, p < .05$). Thus, elementary schools intending to maximize physical activity opportunities may need to regularly connect parents to the policies and practices related to these opportunities. This partnership could encourage students to value school-based physical activity and, in turn, help them achieve recommended daily physical activity levels

Cette étude examine les perceptions de parents, d'enseignants et de gestionnaires de l'élémentaire sur l'accès aux équipements scolaires et sur les occasions de s'adonner à la pratique d'activité physique dans l'environnement d'une école. Les participants de dix écoles publiques de l'Ouest canadien ont répondu à une version modifiée d'un sondage sur l'activité physique en milieu scolaire. Les résultats ont fait ressortir un consensus entre les trois groupes (parents, enseignants, gestionnaires) sur l'usage adéquat des équipements et à l'engagement parental dans la promotion de l'activité physique en milieu scolaire. Par contre, les résultats moyens des trois groupes à la question sur l'efficacité des politiques et pratiques de l'école relativement aux occasions de pratique d'activité physique différaient significativement ($F(2, 34) = 12.54, p <$

.05). *Par conséquent, les écoles élémentaires qui veulent maximiser les occasions de pratique d'activité physique auraient avantage à faire participer les parents aux politiques et pratiques qui encadrent ces occasions de pratique. Un tel partenariat inciterait les élèves à valoriser davantage l'activité physique à l'école et les aiderait du même coup à atteindre les taux d'activité physique quotidienne recommandés.*

Introduction

Recent statistics indicate 88% of Canadian children and youth are not active enough to meet the recommended 90 minutes of daily physical activity (Active Healthy Kids Canada, 2010). Comparatively, more than half of the children and youth surveyed across 34 countries confirmed they were not meeting the World Health Organization's guidelines of at least 60 minutes of moderate to vigorous intensity activity per day (Janssen et al., 2005). These figures signal concern as health benefits associated with physical activity are evident in early adolescence; furthermore, behaviours consistent with a healthy lifestyle are often established in adolescence and may track into adulthood (Dishman et al., 2005; Hallal, Victoria, Azevedo, & Wells, 2006; Stzainer, Hannan, Sirard, & Story, 2006).

It is important that school-aged children and adolescents meet or exceed recommended physical activity guidelines. Findings from a current review of the physical activity and health literature found the more active school-aged children and youth are, the greater the associated health benefits (Janssen & LeBlanc, 2010). Evidence has also shown that regular participation in moderate to vigorous exercise is associated with: (i) enhanced bone health later in life, (ii) a reduced likelihood of developing type 2 diabetes, (iii) improved mental health, and (iv) improved academic achievement (Castelli, Hillman, Buck, & Erwin, 2007; Ekelund et al., 2009; Janssen & LeBlanc, 2010; Kantomaa, Tammelin, Ebeling, & Tannila, 2008; Lindner, 2001; Stevens, To, Stevenson, & Lochbaum, 2008; Zoeller, 2007).

To help children and adolescents increase daily physical activity, schools have been identified as ideal settings for physical activity enhancement because of the waking hours spent there during the school year, and the multitude of student backgrounds present in school populations (Fox, Cooper, & McKenna, 2004; Lobstein & Swinburn, 2007; Pate et al., 2005; St. Leger, Kolbe, & Lee, 2007). School-based physical activity opportunities are often available to students through health and physical education classes, access to playing fields, gymnasiums, and playgrounds during leisure times, and intramural and interscholastic sports. However, with an increased emphasis on academic subjects, lack of resources, and non-supportive physical activity policies and practices schools struggle to maximize opportunities for physical activity (Naylor, Macdonald, Zebedee, Reed, & McKay, 2006; Trudeau & Shephard, 2005, 2008). As a result, student physical activity levels and opportunities for school-based physical activities have decreased (Boyle, Jones, & Walters, 2008; Evenson, Ballard, Lee, & Ammerman, 2009).

These findings are troublesome because school environments have been shown to positively and significantly influence daily physical activity levels of school-aged children and adolescents. At a tangible level, schools that offer availability and access to physical activity facilities, large indoor and outdoor

spaces, and equipment (including playground markings) are enhancing daily student physical activity levels (Cohen, Scott, Zhen Wang, McKenzie, & Porter, 2008; Cradock, Melly, Allen, Morris, & Gortmaker, 2007; Haug, Torsheim, Sallis, & Samdal, 2008; Loucaides, Jago, & Charalambous, 2009; Nichol, Pickett, & Janssen, 2009; Ridgers, Stratton, Fairclough, & Twisk, 2007; Verstraete, Cardon, De Clercq, & DeBourdeaudhuij, 2006). At a less tangible level, school staff, students, and parents concur that the presence of adult role models who value physical activity, and school staff who initiate and lead physical activities during classroom sessions and leisure times, are factors associated with a student's decision to be active (Barnett, O'Loughlin, Gauvin, Paradis, & Hanley, 2006; Dzewaltowski et al., 2009; Faulkner, Adlaf, Irving, Allison, & Dwyer, 2009; Loucaides et al., 2009; Mahar et al., 2006; Naylor et al., 2006; Pangrazi, Beighle, Vehige, & Vack, 2003; Scruggs, Beveridge, & Watson, 2003). Moreover, some studies have indicated that just by being at school, and feeling connected to the member of the school community (i.e. staff and peers), children and adolescents are more active throughout the day (Barr-Anderson et al., 2007; Bonny, Britto, Klostermann, Hornung, & Slap, 2000; Fairclough, Butcher, & Stratton, 2008). However, no studies have quantitatively justified these findings.

The literature has outlined many factors associated with school settings that positively impact school-aged children and adolescent daily physical activity levels. Although, studies that have examined the relationship between school environments and physical activity have largely focused on the built environment (Cohen et al., 2008; Haug, Torsheim, & Samdal, 2008) rather than a broader conceptualization that includes aspects of school culture (i.e. school policies and practices, member assumptions). Schools are complex places with multiple layers of influence on physical activity; thus, it may be necessary to look beyond school artifacts to explore the influence that school members' underlying beliefs and assumptions have on physical activity policies and practices.

Therefore, the aim of this study is to explore, using mixed methodologies, the perceptions of elementary parents, teachers, and administrators concerning access to, and opportunities for physical activity in their school. Findings from this study may help schools identify the facilitators and barriers to school-based physical activity opportunities and potentially, direct school staff to useful resources (i.e. local community, parents) that could assist in the promotion of physical activity.

Methods

Participants

This descriptive study used a purposive sample of parents of elementary aged children (kindergarten-grade five), elementary teachers and administrators from ten public schools in one western Canada public school district. From a total sampling population of 184 teachers, 20 administrators, and over 7000 parents/guardians, 45 teachers; 12 administrators; 125 parents responded to the survey.

An array of learning environments existed across participating schools; five schools offered conventional curricular programs, four schools were French-immersion, and one school was considered by the district to be an alternative learning environment. The rationale for school selection was geographical

proximity, common access to, and opportunities for, physical activity in the local community. School staff and parents were of interest in this study because of their influence on physical activity policies and practices; their beliefs provide the framework for school values, member behaviour, and how the school environment is perceived (Schein, 1999). In particular, teachers have established beliefs and assumptions surrounding access to, and opportunities for physical activity in their school environment.

Procedure

In early January, the university, necessary administrators, and the local school district ethics review boards granted ethics approval for study procedures. Immediately thereafter, school principals were individually briefed on study goals, benefits, and participant expectations. Teachers and parents were recruited through study overviews at staff and parent advisory council meetings, in school newsletters, on school websites, and in written letters of invitation. Interested participants were asked to provide informed consent and complete the online survey by the end of March at a time, and in a location convenient to them.

Measurement

School staff and parent perceptions were collected through an online, modified version of the ActivePASS (Physically Active School Settings) survey (Bradley, 2008). ActivePASS is a valid and reliable measure of opportunities for physical activity in Australian elementary and secondary school settings (Bradley & O'Connor, 2009). This particular survey was selected as a model for this study because it examines the physical and cultural factors (i.e. school policies and practices) related to school-based physical activity opportunities simultaneously. It also considers factors outside the curriculum that have shown to influence school-based physical activity opportunities (Bauman, Bellew, Vita, Brown, & Owen, 2002; Bradley, 2008; Gorely, 2005; Sallis, Bauman, & Pratt, 1998; Sallis et al., 2001). However, it required alteration to assess school-based physical activity opportunities across Canadian school contexts (elementary, middle, and secondary school).

The modified ActivePASS survey (MAPS) includes language and situations representative of Canadian school contexts. Items are worded in a strong but inoffensive manner to help minimize excessive agreement in response choices (DeVellis, 1991). As a result, a 19 item survey emerged consisting of three sub-scales: (i) school policies and practices (12 items), (ii) school artifacts (four items), and (iii) parent involvement (three items) (Table 1). In the first sub-scale, formal school policies and informal practices linked to physical activity opportunities were addressed. In turn, insights were gained into a school's physical activity culture. The second sub-scale made inquiries about a school's natural and built environments (i.e. playground structure(s), school layout(s), overall appearance of school grounds, school building(s), and the equipment used for physical activity). The third sub-scale included items associated with the integration of parents into the promotion of school-based physical activity opportunities (i.e. physical education assistants, leisure time supervisors).

The original Likert-type response scale was adjusted to afford participants the following five choices: strongly disagree = 1, disagree = 2, undecided = 3, agree = 4, strongly agree = 5. The ActivePASS scale was modified to ensure consistent response choices across items and to provide relevant answers for new

MAPS items. According to (DeVellis, 1991), Likert scaling with five response options is preferred when measuring perceptions, beliefs, and attitudes; it allows participants to answer on a continuum from strong disagreement, a neutral midpoint, to strong agreement. In addition, a *don't know* option was inserted to reduce the number of forced false perceptions and provide a choice for participants who were new to a school or unaware of the situation presented in an item. As in ActivePASS, participants were given the opportunity to provide a written response at the end of the survey to the following question: "Please describe any additional ways your school is encouraging physical activity."

Table 1

*Modified ActivePASS survey (MAPS)***School policies and practices**

1. School equipment used for physical activities (i.e. balls, skipping ropes etc.) is available to students during recess and lunch periods.
2. Physical activity areas such as playgrounds, fitness/weight rooms, and gymnasiums are accessible to students with mobility difficulties (i.e. using wheelchairs or walkers).
3. The school shares its equipment and facilities used for physical activity with community recreational groups.
4. The school has established partnerships with community parks and recreation departments (i.e. use of community sport fields, trails, or facilities).
5. Students have opportunities to learn how to organize games, sports, and other physical activity programs at school.
6. School staff are encouraged to be physically active role models (i.e. walk/run with students during Terry Fox walks/runs).
7. The school provides opportunities for staff and students to be physically active together (i.e. intramurals, Terry Fox walks/runs, class activities).
8. School staff promote and facilitate student participation in physical activities during recess and lunch periods (i.e. organize intramural activity programs, supervise open gym sessions, etc.).
9. The school recognizes students through celebrations, certificates, and/or rewards for physical activity participation.
10. The school discourages the removal of time dedicated to PE or recess and lunch periods as punishment.
11. The school provides physical activity opportunities beyond PE classes for students with disabilities.
12. Students with disabilities are included in regular PE classes.

School artifacts

13. The school grounds provide enough space for large groups of students (20+) to be physically active in all types of weather (i.e. PE classes, intramurals, recess and lunch periods).
14. The school has many visible cues on school grounds that prompt physical activity (i.e. targets, nets, playground markings for games/activities).
15. The school's playgrounds and physical activity facilities are of good quality (i.e. safe, maintained, painted).
16. School grounds are well maintained (i.e. free from graffiti, litter, rundown spaces).

Parent involvement

17. Parents are well informed about school programs and initiatives in PE, sport, and other opportunities for physical activity (i.e. through school newsletters, parent council meetings, online media).

18. Parents are given opportunities to be involved in their child's physical activity programs (i.e. extracurricular sport and leisure clubs, teams, lunch and recess activities).

19. Parents are usually involved in school decisions around active transportation initiatives (i.e. walk/bike to school week).

MAPS has shown to be a reliable and valid tool for assessing parents, teachers, and administrators perceptions of school based physical activity opportunities in Canadian school contexts (Rickwood, Temple, & Meldrum, 2011).

Results

All data were analyzed using SPSS (version 18). Descriptive statistics explored perceptions among parents, teachers, and administrators concerning their school's opportunities for physical activity. Univariate and post-hoc analyses evaluated differences between sub-scale survey scores for participant types; frequencies for *don't know* responses were calculated for each item, within each sub-scale, and for individual participant types. Furthermore, the qualitative data was synthesized using a colour-coding system that disseminated the raw data into major thematic groupings. In turn, the data was further analyzed to determine any minor themes from the grouped data.

School policies and practices

Table 2 presents descriptive statistics for the items corresponding to school policies and practices. The greatest mean score variability was between parents and administrators (mean difference = 10.43); teacher and administrator mean scores were comparable. The overall combined mean score was 50.91 (SD = 5.44) out of a total sub-scale score of 60 (12 items). Univariate analysis revealed that mean differences were significant between participant types (F (2, 34) = 12.54, $p < .05$). Post-hoc analysis determined that parent responses were significantly different than teacher (mean difference = 7.98, standard error = 1.90, $p < .05$) and administrator responses (mean difference = 10.53, standard error = 2.31, $p < .05$). However, teacher and administrator responses were not significantly different.

Table 2
Descriptive statistics for school policies and practices

| Participant type | N | Minimum | Maximum | Mean | Std. Deviation |
|-------------------------|----------|----------------|----------------|-------------|-----------------------|
| Parents | 10 | 31.00 | 55.00 | 44.70 | 5.73585 |
| Teachers | 18 | 44.00 | 60.00 | 52.89 | 4.63857 |
| Administrators | 8 | 46.00 | 60.00 | 55.13 | 5.96268 |

School artifacts

Table 3 illustrates the descriptive statistics linked to items focused on school artifacts. The mean score variability was greatest between teachers and

administrators (mean difference = 1.14). On the whole, mean scores across participant types were analogous. The overall combined mean score was 16.15 (SD = 2.56) out of a total sub-scale score of 20 (four items). Univariate analysis confirmed no significant differences between participant types ($F(2, 179) = 1.839, p < .05$).

Table 3

Descriptive statistics for school artifacts

| Participant type | N | Minimum | Maximum | Mean | Std. Deviation |
|-------------------------|----------|----------------|----------------|-------------|-----------------------|
| Parents | 125 | 9.00 | 20.00 | 15.94 | 2.61430 |
| Teachers | 45 | 8.00 | 20.00 | 15.42 | 3.14418 |
| Administrators | 12 | 13.00 | 20.00 | 17.08 | 1.92865 |

Parent involvement

Table 4 presents the descriptive statistics for items connected to parent involvement in school-based physical activity opportunities. The mean score variability was largest between parents and administrators (mean difference = 1.26) but overall, no significant differences between participant means were found ($F(2, 146) = 2.558, p < .05$). The overall combined mean score was 11.99 (SD = 1.81) out of a total sub-scale score of 15 (three items).

Table 4

Descriptive statistics for parent inclusion in school-based physical activity

| Participant type | N | Minimum | Maximum | Mean | Std. Deviation |
|-------------------------|----------|----------------|----------------|-------------|-----------------------|
| Parents | 102 | 5.00 | 15.00 | 11.38 | 2.13432 |
| Teachers | 36 | 6.00 | 15.00 | 11.94 | 1.80388 |
| Administrators | 11 | 10.00 | 15.00 | 12.64 | 1.50151 |

“Don’t know” findings

MAPS produced a total of 715 *don’t know* responses (parents = 637, teachers = 72, administrators = 6). The items associated with school policies and practices tallied 644 or 90% of the cumulative total (parents = 579, teachers = 60, administrators = 5). Considering that only 12 administrators completed MAPS, almost 50% of school leaders were not aware if the policies and practices at their school supported opportunities for physical activity. In addition, the most *don’t know* responses recorded by parents and teachers were with item 11, “The school provides physical activity opportunities beyond physical education classes for students with disabilities,” (parents = 106; teachers = 17). For administrators, *don’t know* responses were most prevalent ($n = 3$) with item 12: “Students with disabilities are included in regular physical education classes.” The items correlated to school artifacts did not produce any *don’t know* responses. Additionally, the third sub-scale (items 17-19) generated 39 *don’t know* responses (parents = 26, teachers = 12, administrators = 1).

Qualitative data

The participants took the opportunity to expand on what their individual school was doing to encourage physical activity beyond the strategies outlined in MAPS. Overall, 118 parents, 35 teachers, and five administrators outlined six key characteristics of physically active school settings.

Availability of physical activity opportunities. The first characteristic relates to the opportunities for school-based physical activity. Most parents perceived that their child's school did not offer enough physical activity opportunities. For example, one parent stated, "Our school has a swimming club, soccer school hour – that's about it – I think it's not enough for elementary level students." Another parent commented, "Our school needs to provide before and after school activities in the school gymnasium with a parent or teacher volunteer – more time at lunch and recess is needed for organized intramurals." From a school staff perspective, one teacher explained, "At lunch times and after school, we offer rugby, basketball, floor hockey, kick ball, and tennis – most days during the week there are activities in the gym for a chosen age group." Furthermore, one principal stated, "We have introduced a lunch time sports program three times a week with trained instructors."

Adult role models. Another key characteristic of physically active school settings is the presence of adult role models. One parent explained, "I feel our school's staff are good role models to the students and are very physically active in their own time as well as at school, as are many of the parents." Other parents confirmed, "I am extremely impressed with the staff's commitment to extracurricular physical activities – teachers are there to cheer even if they are not involved with set up," and "We love the extra work the teachers and principal contribute to the active well-being of my three kids." Teachers and administrators were not as vocal on this topic, but did acknowledge their role in promoting opportunities for physical activity. For example, one teacher mentioned, "I wish there were more younger teachers to help lead as role models." It was also apparent that some school staff felt that being physically active at school may encourage students to be more active. One principal discussed, "Staff has formed a running group to enter the annual 10K run and are training together after school." At another school, a teacher indicated, "Yoga classes for teachers are provided after school."

Existing school policies and practices. A third characteristic of schools that effectively promote physical activity is supportive school policies and practices. Several teachers suggested that formal policies and informal practices positively impact opportunities for physical activity at school. As one teacher explained, "On non-gym days, most teachers make an effort to offer daily physical activity in the classroom as mandated by the British Columbia government." Another teacher commented, "Many teachers use the 'Action Schools' bins which were provided to us several years ago to increase physical activity in the classroom." In further support, another teacher discussed, "Since classes do not get the gymnasium every day (yet teachers are expected to teach gym on a daily basis), many teachers run around the school with students."

However, parent perceptions were quite different as illustrated in one comment stating, "The Parent Group (PAC) have purchased balls and skipping ropes etc. to be used but it apparently is not within the teacher's duties (in their contract) to disperse the equipment to the children so most of the time it stays

locked up.” In addition, other parents voiced their displeasure with school policies and practices; specifically, one parent mentioned, “When it is raining, kids are kept inside rather than encouraged to bring rain wear and taken outside to play.” Another parent exclaimed, “I was told children should not ride their bike to school – sometimes, if children do not get their homework done, they have to stay in at lunch or recess to finish it.” In terms of school practices related to physical education, parents did not approve of the activities and delivery of physical education at their school. One parent stated, “There is no dedicated physical education teacher and as most of the teachers are nearing retirement, there is very little interest in providing proper instruction to children to learn the skills required to succeed in sports such as volleyball, basketball, gymnastics, and track and field.” Moreover, one parent’s perception of physical education at her child’s school was that:

The school seems more focused on running and sports in a traditional sense – not all kids like soccer; I think the children would benefit from more alternative activities like dance, yoga, or martial arts that tend not to be as competitive and would show kids that traditional sports are not the only ways to keep physically fit.

Connections to community resources. Participants also noted that community integration was important when promoting physical activity at school. In terms of bringing resources into the school community, one parent recognized that, “Our school has Olympians visit and talk to the kids at assemblies and in classes.” Another parent stated, “Our school organizes after school clubs such as swim club, mountain biking club, and encourages community or private companies/organizations to offer programming (i.e. baseball clinics, soccer, etc.) in our gym after school.” Teachers also valued the incorporation of community resources into school activity programs. For example, one teacher explained, “A representative from Action Schools was invited to work with groups of older students to teach them games to pass on to younger students.” Another teacher expressed, “We have a jump rope club come and do demo’s; local clubs/sports come to do demo’s and teach students different sports; bike safety skills every year provided by police officers.” When taking students into the community, three teachers said, “We walk to local universities for physical education and the beach for field trips and we offer horseback riding programs for the disabled during school time.”

Use of outdoor spaces. According to parents, access and usage of outdoor spaces on school grounds was another essential characteristic of physically active school settings. In particular, most parents believed that outdoor spaces were not being used effectively to promote physical activity. As an example, one parent said:

The playing fields are not properly drained or irrigated and end up closed from late fall until spring; even in the dry season, the turf is sparse, full of weeds, and the surface is uneven; it is generally not a great playing space and is, for this reason, not used by the community as a playing field.

Another parent commented, “There is no school, government, or community funding to upgrade/improve playing field conditions which limits the available space and opportunity for kids to be active.” In terms of the importance of accessibility to playing fields, one parent stated, “The size of the school field - just to get from one end to the other is good exercise.” Beyond school fields,

availability and access to well maintained, covered outdoor spaces, and paved surfaces can also influence physical activity opportunities. As one parent explained, “The limitations are that fields cannot be used during the winter months, and the covered space is poorly maintained for sports activities.”

Active transportation. Finally, parents and teachers discussed the importance of promoting active transportation to and from school. One parent mentioned, “Our school is very active in getting families to walk, bike, or scooter to school instead of driving; car pooling is encouraged.” Another parent concurred, “Our school has mentioned on numerous occasions to ‘walk or ride’ to school when possible; most of the kids on the block walk with a parent, and it has become a real social event.” Teachers also agreed that encouraging active transport was vital towards promoting activity before, during, and after school. One teacher was quoted saying, “The biggest way to promote more physical activity is to keep asking parents to walk/bike with their child to and from school rather than driving.” In addition, certain schools made active transportation a more viable option for parents by improving student safety measures. For example, a teacher at one school explained, “We have school safety patrols, walking school busses, and have advertised safe walking routes to encourage active transportation.” At another school, a teacher reiterated that, “We have ‘Walk on Wednesdays’ where staff and students are encouraged to walk at least part way to school.”

Discussion

The aim of this study was to examine perceptions of elementary school parents, teachers, and administrators concerning access to and opportunities for physical activity in their school setting. In general, perceptions of parents and school staff were not harmonious across MAPS items.

Quantitative findings found agreement between parent and school staff perceptions when asked about the inclusion of a school’s physical environment and parent roles in promoting school-based physical activity. Across participant types, it was perceived that elementary schools were using built structures (including playgrounds) and integrating parents effectively into school-based physical activity opportunities. However, less than half of MAPS items (7 of 19) pertained to these two factors; additional school artifacts and parent involvement items may have produced different results.

Contrastingly, perceptions were significantly different between participants concerning the influence of school policies and practices on opportunities for physical activity at school. Teachers and administrators believed that school policies and practices were positively enhancing opportunities for physical activity. Specifically, they perceived students were being provided with opportunities to participate in intramural programs, school sports teams, and sport skill enhancement sessions before, during, and after school. Furthermore, teachers stated they were making efforts to meet the recommended daily physical activity guidelines (30 minutes) beyond the time spent in the gymnasium for physical education classes. Yet, an underlying theme was the dependency on the school gymnasium as the main space for physical activity. Some teachers indicated they were using the equipment and spaces available to them on “non-gym” days or when the gym was not available. On the whole, physical activity was associated with time spent in the gym. Only one teacher mentioned that her students ran around outside when the gym was not available. Instead of focusing

on availability and access to gymnasiums, teachers may want to look for alternative spaces (i.e. outdoor grounds, community recreational facilities), resources (i.e. parents, local sport and leisure clubs) and times (i.e. recess and lunch periods) to promote physical activity.

Parents, on the other hand, were unsure or disagreed that school policies and practices were supportive of physical activity. For example, *don't know* parent responses were highest in this sub-scale representing 81% of the total *don't know* responses among participants. Specifically, parents perceived equipment to be available for use during leisure times but due to school policy, was not accessible. Furthermore, school policies relative to weather conditions and outdoor play were viewed as restrictive. Students were not given the opportunity to play outside in the rain or under covered spaces during recess and lunch. Parents also commented on the absence of a physical education specialist and the focus on traditional team sports in physical education classes as inhibiting student desire to participate in physical activities. These perceptions are supported in other studies that show positive associations between lifestyle and individual activities and physical activity levels in physical education (Bauer, Yang, & Austin, 2004; Boyle et al., 2008; McKenzie et al., 2006; Wilson et al., 2005). Previous research also confirms availability and access to physical activity equipment at school increases opportunities for physical activity and student physical activity levels (Haug, Torsheim, Sallis et al., 2008; Haug, Torsheim, & Samdal, 2008; Zask, van Beurden, Barnett, Brooks, & Dietrich, 2001). As demonstrated, there is a disconnect between what schools are doing to promote school-based physical activity and parent perceptions. Family involvement in the promotion of physical activity significantly influences physical activity levels of children and adolescents (Biddle, Gorely, & Stensel, 2004; Sallis, 1998). Thus, schools may need to make concerted efforts to educate and inform parents of school policies and practices associated with school-based physical activity opportunities especially if parents are to effectively promote their child's engagement in them.

In addition to supportive school policies and practices, the majority of parents and teachers strongly believed that adult role models who value physical activity were important elements of physically active school cultures. Parents, in particular, recognized and valued the teacher's and administrator's commitment to school-based physical activity opportunities. Other studies have also found that teacher and/or principal involvement in school-based physical activities significantly influence student physical activity levels (Barnett et al., 2006; Faulkner et al., 2009; Jennings-Aburto et al., 2009; Lounsbury, Bungum, & Smith, 2007; Naylor et al., 2006; Thompson, Rehman, & Humbert, 2005).

Another key implication from this study is the importance of integrating community resources into school-based physical activity opportunities. Earlier studies found that meshing community physical activity resources with school-based physical activities increases physical activity opportunities and student physical activity levels (Manios, Moschandreas, Hatzis, & Kafatos, 1999; Webber et al., 2008). One study found that in schools with strong links to the community (i.e. recreational centers, local sport clubs), benefits to students and teachers included: (i) increased knowledge of physical activity, (ii) increased awareness of local physical activity opportunities, and (iii) continued student participation in physical activity outside of school hours (Cale, 2000). In another study, 42 elementary teachers were asked their perceptions about the significance

of connecting community resources to school-based physical activity opportunities. Results found that integrating outside physical activity resources increased student and teacher physical activity levels, and opportunities for physical activity (Naylor et al., 2006).

In order to maximize opportunities for school-based physical activity, parents and teachers highlighted the importance of outdoor spaces and the promotion of active transportation to and from school. Parents suggested that schools must strive to maintain outdoor spaces and make them accessible to students year round. Earlier school culture and physical activity research has confirmed that well-maintained, accessible outdoor spaces are associated with enhanced student physical activity and physical activity opportunities (Allison & Adlaf, 2000; Dagkas & Stathi, 2007; Dymont & Bell, 2007; Fitzgerald, Bunde-Birouste, & Webster, 2009; Mulvihill, Rivers, & Aggleton, 2000). Furthermore, parents and teachers felt that active transportation was accentuated in short intervals and not sustained over time. On the other hand, some schools took additional steps to minimize the barriers associated with walking or biking to school by advertising safe walking routes, providing adult volunteers to walk with students, and ensuring that storage for bikes, scooters, and roller blades was secure and sheltered. Numerous studies have demonstrated that students who actively transport to and from school have higher daily physical activity levels than students who are driven to and from school (Eyler et al., 2008; Haerens et al., 2006; Jurg, Kremers, Candel, Van der Wal, & Meij, 2006; Kong et al., 2009). One study found that by incorporating active transportation into a child's or adolescent's occupation as a student, active transport to and from school became part of their daily routine and helped sustain adequate physical activity levels (Duncan, Duncan, & Schofield, 2008). Therefore, schools should make efforts to integrate the benefits of active transportation to students across the curriculum and to parents through school information sessions and media (i.e. newsletters, webpage) at various intervals during the school year.

Limitations

A limitation of the present study was the timing of school and participant recruitment. In the initial school recruitment stages, administrators were focused on kindergarten registration. As the study period progressed, teacher and parent recruitment was affected by a mark-reporting period and a three-week spring holiday break where school newsletters that contained study details were not published and sent home to parents. Another limitation was the provincially imposed school satisfaction survey that school staff and parents were already in the process of completing. The school satisfaction survey gathered data on school environments, safety, and achievement. Thus, potential participants may have perceived MAPS as a duplication of the items in the school satisfaction survey and therefore, reduced their desire to dedicate more time to the issue. An additional limitation is the sample population. Purposive sampling from one public school district in western Canada limits the generalization of study results to other populations. In turn, students were not asked to complete MAPS due to the content knowledge required of school policies and practices. Future studies may modify MAPS for use with middle and secondary students who could offer valuable insights into what facilitates and inhibits opportunities for physical activity at school.

Conclusion

This descriptive study channels attention towards a multi-level, holistic approach to studying school settings in relation to opportunities for physical activity. Findings from this research indicate the importance of built structures and space on school grounds when encouraging students to be physically active. However, accessibility through supportive school policies and practices is perceived as even more important when maximizing the use of places and spaces on school grounds. MAPS, in turn, has accessed the least tangible level of school culture, school member perceptions (Schein, 1999; Schein, 1985), which allows the connection between physical activity opportunities and school member assumptions and beliefs to be better understood.

School culture studies have shown that school initiatives are sustained over time when the entire cultural system is moving forward together (Fullan, 1992, 1998; Hargreaves & Fullan, 1998; Peterson & Deal, 1998). The results from this study show that elementary parent perceptions of school-based physical activity opportunities are significantly different than teachers and administrators. As we know, parents are integral parts of any school culture and considerably influence their child's willingness to participate in school-based physical activity (Haerens et al., 2006; Jurg et al., 2006; Kong et al., 2009). Thus, it is crucial that parent groups are aware and supportive of policies and practices associated with physical activity for effective promotion of school-based physical activity.

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