



A systematic review of adoption, implementation and impact of daily physical activity policies in Canadian schools

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Background¹

- Just 8% of boys and 4% of girls aged 6-17 meet Canadian physical activity (PA) guidelines
- Schools require students to engage in PA through Physical Education (PE) courses
- Cdn children spend < 15% of PE in moderate-to-vigorous PA (MVPA) and PE quality and quantity has declined
- To increase children's PA, Canadian provinces have adopted school-based daily PA (DPA) policies (Table 1)

Purpose

To synthesize evidence regarding adoption, implementation and impact of Canadian school-based DPA policies

Methods

Electronic databases (Ovid Medline, Ovid PsycINFO, Ovid ERIC, and SPORTDiscus), websites and reference lists were searched (Figure 1). Studies published between 2003-2014 were included if they: 1) Were original research studies published in peer-reviewed journals in English or French; and 2) Evaluated adoption, implementation or impact of school-based DPA policies in Canada.

Figure 1: PRISMA flowchart

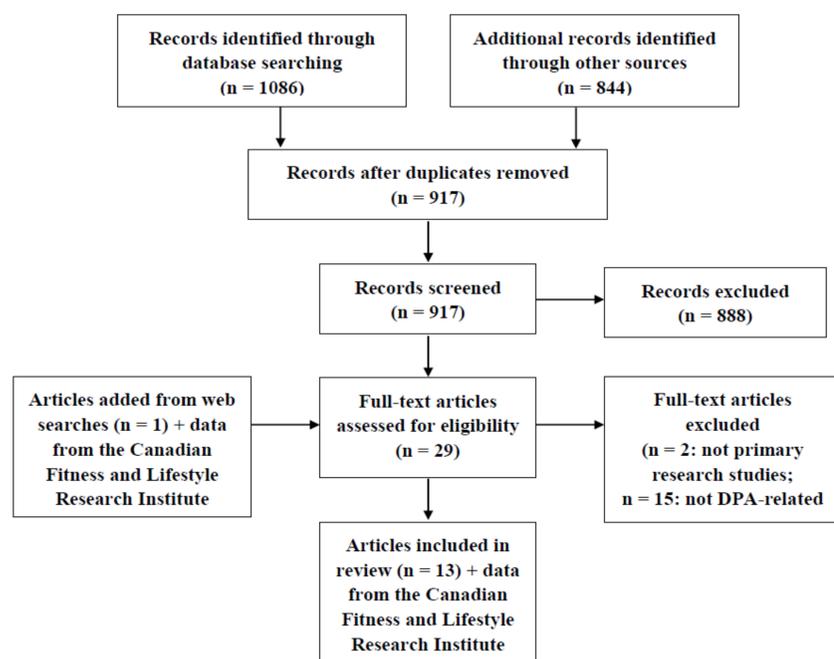


Table 1: Provincial DPA policies¹

Province	Grades	Date implemented	Duration, type and location of PA	Policy strength
Alberta	Grades 1-9	Sept, 2005	≥ 30 mins/d PA of varying form and intensity; in-school	Weak
Ontario	Grades 1-8	Oct, 2005	≥ 20 mins/d sustained MVPA; in-school	Moderate
Manitoba	Grades 11-12	Sept, 2008	55 hr PA practicum focussed on MVPA; in- or out-of school	Moderate
British Columbia	K-Grade 9*	Sept, 2008	30 mins/d PA of varying form and intensity; in-school	Weak
	Grade 9-12*	Sept, 2008	150 mins/wk MVPA; in- or out-of school	Moderate
Saskatchewan	K-Grade 12	Feb, 2010	30 mins/d MVPA; location not specified	Weak

*Grades 8-9 may follow either model

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¹References available in: *Olstad DL, et al BMC Public Health 15:385, 2015.*

Table 2: Literature matrix by province

Authors ¹	Evaluation, time frame	Methods	Results
ALBERTA			
Gladwin et al., 2008	Adoption, time frame not stated	Key informants (n=20) interviewed, document reviews.	DPA succeeded because Kingdon's 3 streams (problem, solution, politics) converged, largely because the Minister of Learning used his power to link the solution with the political stream.
ONTARIO			
1) Faulkner et al., 2014; 2) Stone et al., 2012	Implementation and impact; 2010-11	Grade 5-6 students (n=865) and administrators (n=18 schools) surveyed. Students wore accelerometers for 7d.	1) 89% of schools met most DPA requirements. 2) 49% of students received DPA daily. PA bouts averaged 7.1 mins. Frequency of DPA positively associated with total PA and MVPA mins/d.
1) Leatherdale et al., 2013; 2) Leatherdale et al., 2014	Impact; 2007-08	Grade 1-4 students (n=2326), parents, and administrators (n=30 schools) surveyed.	1) DPA implementation not associated with odds of being overweight or obese. 2) DPA implementation not associated with odds of being highly or moderately active.
1) Leatherdale et al., 2010; 2) Hobin et al., 2010; 3) Leatherdale, 2010	Implementation and impact; 2007-08	Grade 5-8 students (n=2379 studies 1-2, n=1264 study 3), and administrators (n=30 schools) surveyed.	1) 80% of schools met most, and 20% met all DPA requirements. DPA implementation not associated with odds of being more active. 2) DPA implementation models were: 70% offered DPA only on days without PE, 20% offered DPA + daily PE, 10% offered DPA as part of daily PE. DPA implementation models not associated with odds of being more active. 3) DPA implementation not associated with odds of overweight.
Patton, 2012	Implementation; 2012	Teachers (n=145, n=37 schools) surveyed.	16% always conducted DPA when PE was not scheduled, 51% said there was no time for DPA, 65% said DPA was not monitored.
Robertson-Wilson and Levesque, 2009	Implementation; 2005-07	Reviewed publicly available DPA documents.	Aspects of implementation (e.g. resource allocation, task specification) have been considered, others (e.g. sustainability of resources, evaluation plans, extent to which policy is valued) require attention.
BRITISH COLUMBIA			
Watts et al., 2014	Implementation and impact; 2007-08 and 2011-12	Administrators (2007-08: 502 schools; 2010-11: 476 schools) surveyed.	Implementation of DPA was 65%, 56% and 51% for grades 6, 8 and 10. Schools had higher odds of providing ≥ 150 mins PE/wk and provided more mins of PE to grade 8 and 10 students post-policy.
Masse et al., 2013	Implementation; 2010-11	Principals and teachers (n=50, n=17 schools) interviewed.	DPA implementation was 14%-90%. Schools implemented DPA through prescriptive and non-prescriptive approaches. DPA was compatible with school philosophies and beneficial to students but difficult to fit into school schedules and it increased teacher workload.
MANITOBA			
Hobin et al., 2014	Impact; 2008-11	Grade 9-10 students (n=447, n=31 schools) surveyed. Students wore accelerometers for 7d annually.	MVPA declined 11.3%/yr. Students with low or moderate baseline MVPA and attending schools in disadvantaged and rural areas had slower rates of MVPA decline.
CANADA			
Cdn Fitness and Lifestyle Research Institute, 2011	Impact; 2005-07 and 2007-09	~20,000 children aged 5-17 were selected to wear pedometers for 7d.	No change in number of steps taken in any province from 2005-07 to 2009-11 except in Saskatchewan where steps declined. Number of steps did not differ from the national average in any province. Few differences among provinces in the number of steps taken in 2007-09.

Results (Table 2)

Adoption: 1 paper (1 study) in Alberta

Implementation: 8 papers (6 studies) in Ontario and British Columbia

- Overall, moderate but inconsistent implementation of DPA policies
- Strengths: Use of mixed methods
- Limitations: Variability in methods and endpoints, few studies, small sample sizes, no control groups, all cross-sectional self-reports

Impact: 9 papers (6 studies) covering all provinces

- Overall, little to no impact of DPA on children's PA levels or BMI
- Strengths: 1 longitudinal analysis, 1 national study, 3 used accelerometry, large numbers of students included
- Limitations: Variability in methods and endpoints, few studies, small n of schools, no controls, many cross-sectional self-reports

Conclusions

Canadian DPA policies have had little to no impact on children's PA levels or BMI, although it is too early to draw definitive conclusions given the paucity of studies and their limitations. These tentative findings must also be considered in light of the fact that policy implementation was moderate, that there was variation in DPA implementation strategies, and in relation to the timing of the analyses relative to policy implementation.