The daily physical activity (DPA) policy in Ontario: is it working? An examination using accelerometry-measured physical activity data

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Reference


Look out for it!
THE 2012 ACTIVE HEALTHY KIDS CANADA REPORT CARD ON PHYSICAL ACTIVITY FOR CHILDREN AND YOUTH

Physical Activity Levels

The grade for the Physical Activity Levels indicator is an F for the 6th consecutive year, which reflects the ongoing reality that very few children and youth in Canada are meeting the Canadian Physical Activity Guidelines that recommend at least 60 minutes of MVPA per day.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRADE</td>
<td>D</td>
<td>D</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
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</tbody>
</table>

Leading experts in health have concluded that schools are critically important to increasing physical activity among Canada’s youth. School boards and principals play a vital role in implementation of daily physical activity in schools and can ensure that high-quality physical activity opportunities are provided for every student.
Introduction to the Daily Physical Activity (DPA) Policy

• On October 6, 2005 the Ontario Ministry of Education announced a policy requiring “all students in Grades 1 to 8, including students with special needs, be provided with opportunities to participate in a minimum of twenty minutes of sustained moderate-to-vigorous physical activity (MVPA) each school day during instructional time”¹

• Ontario houses 4020 publicly funded elementary schools serving over 1 million children and youth across the province
  – Potential impact of the DPA policy on children’s physical activity (PA) and overall health is huge
    • Has potential to be a very significant public health intervention

To ease implementation, funding, training and resources were provided by the OME.

Online training resource, with creative modules (video clips) for teachers:
http://www.eworkshop.on.ca/edu/dpa/intro.cfm
Issue/Gap: Lack of formal evaluation

• This policy has now been in place for six years however it has never been formally evaluated
  – Is it being implemented?

• Evidence-based policies must be designed, implemented and evaluated on an ongoing basis
  – Evaluation helps ensure that these policies are “optimally effective and maximally utilized”¹

• The effectiveness of DPA is critical to evidence-based health policy and to justify ongoing implementation of the policy

Project BEAT: A unique opportunity for evaluation

- From January 2010 to June 2011, a large scale, multidisciplinary and mixed method study examining how the built environment influences school travel modes of elementary school children in Toronto was conducted (www.beat.utoronto.ca)

- Physical activity was measured using accelerometry, and classroom schedules collected to identify sessions of DPA across the school week

- The collection of data provided the opportunity to explore within schools:
  a) The proportion of children who participate in DPA
  b) The proportion who achieve sustained MVPA within these sessions
  c) Relationships with overall PA levels and health outcomes

These are the objectives of this presentation
Sampling Strategy

Map identifying the 16 schools participating in Project BEAT; Greater Toronto Area (GTA)
Methodology

Sample: 16 schools (TDSB); 1027 Grade 5 and 6 students

Physical characteristics: Height, weight, BMI

Physical activity: ActiGraph GT1M accelerometer (7 days, 5 s epoch)
• Outcomes = total physical activity (counts/day), mean counts (counts/min), minutes of moderate-to-vigorous physical activity (MVPA)
• Analyzed by school days (weekdays; WD) and school day period (SD)

Classroom schedules: used to identify scheduled times for DPA and PE

Characteristics of DPA:
1. Frequency of DPA
2. Frequency and average length of sustained bouts of MVPA (≥5 min)
Statistical Analyses

1. Pearson product moment correlations
   To assess relationships between the frequency of scheduled daily physical activity (DPA\textsubscript{total}) and accelerometer-measured characteristics of physical activity (WD, SD)

2. Independent-samples t-tests
   a) To examine differences in PA according to level of DPA participation (<5 days/wk vs. 5 days/wk)
   b) To explore number and average length of bouts of MVPA during DPA (by gender)
   c) To examine differences in WD and SD levels of PA between children who accumulated at least 1 bout of MVPA during DPA and those failing to accumulate any bouts

\textit{p<0.05}
Now for some results!
1. Less than half of children engaged in DPA every day, and, not a single child sustained MVPA for at least 20 min.

Table 1. Presenting Project BEAT Results (n=16 Toronto District School Board schools) According to the School Implementation Continuum for Daily Physical Activity (DPA)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Stage 1</th>
<th>Stage 2</th>
<th>Stage 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule</td>
<td>Students are occasionally given opportunities to be physically active during the 300 minutes of instructional time.</td>
<td>Students are often given opportunities to be physically active each day for 20 minutes during the 300 minutes of instructional time.</td>
<td>Students are always given opportunities to be physically active each day for 20 minutes during the 300 minutes of instructional time.</td>
</tr>
<tr>
<td>Quality of daily physical activities</td>
<td>Very few students are physically active for the full 20 minutes.</td>
<td>Some students are physically active for the full 20 minutes.</td>
<td>All students are physically active for the full 20 minutes.</td>
</tr>
<tr>
<td></td>
<td>Just 19% of children sampled attained at least 1 sustained bout (≥5 minutes) of MVPA during scheduled DPA.</td>
<td>Not a single child sustained MVPA for a minimum of 20 minutes during scheduled DPA; the longest recorded bout lasted 18 minutes.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

2. There was a **positive association** between the frequency of DPA and PA

<table>
<thead>
<tr>
<th>Table 2: Characteristics of Accelerometer-measured Physical Activity According to Frequency of Daily Physical Activity (DPA) per School Week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency of DPA</strong></td>
</tr>
<tr>
<td>Total sample (number)</td>
</tr>
<tr>
<td>TPA&lt;sub&gt;WD&lt;/sub&gt;</td>
</tr>
<tr>
<td>MC&lt;sub&gt;WD&lt;/sub&gt;</td>
</tr>
<tr>
<td>MVPA&lt;sub&gt;WD&lt;/sub&gt;</td>
</tr>
<tr>
<td>MVPA&lt;sub&gt;SD&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

Mean (standard deviation) presented; significantly higher in those getting 5 days/week, *p<0.05
WD=weekday; SD=school day
TPA<sub>WD</sub> = total physical activity (counts·day<sup>-1</sup>·weekdays); MC<sub>WD</sub> = mean counts (counts·min<sup>-1</sup>·weekdays); MVPA<sub>WD</sub> = minutes of moderate-to-vigorous physical activity (weekdays); MVPA<sub>SD</sub> = minutes of moderate-to-vigorous physical activity (school day)
3. The majority of kids are only getting 1 relatively short bout of MVPA during DPA

<table>
<thead>
<tr>
<th>Number of ≥5-minute Bouts of MVPA</th>
<th>Total (n=165)</th>
<th>Boys (n=88)</th>
<th>Girls (n=77)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>74.5</td>
<td>70.5</td>
<td>79.2</td>
</tr>
<tr>
<td>2</td>
<td>18.2</td>
<td>20.5</td>
<td>15.6</td>
</tr>
<tr>
<td>3</td>
<td>3.7</td>
<td>3.4</td>
<td>3.9</td>
</tr>
<tr>
<td>4</td>
<td>3.6</td>
<td>5.6</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Duration (min)

- Total: 7.1 (2.6)  
- Boys: 7.3 (2.5)  
- Girls: 6.9 (2.9)

* significantly different from estimate for girls (p<0.05).
4. The majority of all bouts of MVPA during DPA last between 5 and 10 minutes.
5. Those children who achieve at least 1 bout of MVPA during DPA have more positive PA profiles, are more likely to achieve PA guidelines, and fewer are overweight/obese.
Discussion

Objective of study: to evaluate whether the Ontario Ministry of Education’s Daily Physical Activity (DPA) policy is being effectively implemented in elementary schools.

Result: Majority of schools are not meeting the required frequency (5 days) or intensity (sustaining moderate-to-vigorous physical activity for at least 20 minutes) of the DPA Policy.

However….the frequency and intensity of DPA is positively related to health behaviours/outcomes of students.
Strengths and Limitations

Strengths:
• One of the only studies conducted to date that provides feedback to key stakeholders about DPA implementation
• Objective measure of PA behaviour

Limitations:
• Small convenience sample (16 schools)
• Cross-sectional study
• Reliance on classroom schedules to track DPA
Future Directions

• Re-visit the specifications of the DPA policy (i.e., 20 minutes of sustained MVPA)

• Conduct longitudinal research

• Focus on schools which are succeeding in successfully implementing the DPA policy (uncover facilitators)
Acknowledgements

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[www.beat.utoronto.ca](http://www.beat.utoronto.ca)