Is Walking to School Enough to Achieve Recommended Levels of Physical Activity for Adolescents?

Kek Chiew Ching, Enrique García Bengoechea, John C. Spence, Sandra Mandic.

21 July 2016
Something about Singapore

City landscape

Neighbourhood

Schools

Parks and playgrounds
Opportunities of Physical Activities in Schools

- Physical Education lessons
- Co-curriculum Activities
- Academic Learning
- Moving to classes
- Transport to schools

Weekly PE lessons:
- School years 1-3: 2 hours
- School years 4-6: 2.5 hours
- Secondary school: 1-2 times/week
- 30 min for HE lesson
Reduction in physical activity levels

- Increasing sedentary behaviours
- Declining rates of active transport to schools
- Decreasing opportunities for physical activities
- Increasing rates of motorized transport to schools
BEATS Student Survey
(n=314)

Active Transport (AT)
23.3% (n = 73)

Motorised Transport (MT)
58.9% (n = 185)

Active and Motorised Transport (AT+MT)
17.8% (n = 56)
Methods

Study Design
- Cross-sectional
- Analysis of data collected as part of the BEATS Student Survey in 2014-15

Participants
- 314 adolescents
- 12 Secondary schools
- Age: 14.7 ± 1.4 years
- 32.8% boys

Outcome Measure
- Objectively measured physical activity

Inclusion Criteria:
- 3 valid weekdays
- 1 valid weekend day

Exclusion Criteria:
- Boarders
Methods

Measurement Procedures

- Online survey (demographics, transport to school habits, health behaviours)
- Anthropometric measurements (height, weight, waist circumference)
- Physical activity levels (measured using accelerometers)

Data Analysis

- Chi-square
- One-way ANOVA
Physical Activity Assessment

Activity meter

Activity graph
Physical Activity and Transport to School in Dunedin Adolescents

Meeting PA Guidelines on a Weekday

- AT: 57.5%
- AT+MT: 51.8%
- MT: 33.5%

Physical activity guidelines for youth
1+ hour/day

BEATS Student Survey (n=314)
Weekly Physical Activity

Average Daily Physical Activity

<table>
<thead>
<tr>
<th></th>
<th>Average day</th>
<th>Weekday</th>
<th>Weekend day</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>61.2</td>
<td>63.5</td>
<td>50.9</td>
</tr>
<tr>
<td>AT + MT</td>
<td>63.2</td>
<td>64.1</td>
<td>48.9</td>
</tr>
<tr>
<td>MT</td>
<td>54.4</td>
<td>53.9</td>
<td>46.8</td>
</tr>
</tbody>
</table>

Physical activity guideline

BEATS Student Survey (n=314)
Physical Activity during School Days

Average Daily Physical Activity

<table>
<thead>
<tr>
<th>Time</th>
<th>Sedentary</th>
<th>Light PA</th>
<th>Moderate-to-vigorous PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 am – 9 am</td>
<td>50%-58%</td>
<td>28%-32%</td>
<td>10%-22%</td>
</tr>
<tr>
<td>3 pm – 4 pm</td>
<td>51%-56%</td>
<td>27%-32%</td>
<td>14%-22%</td>
</tr>
<tr>
<td>4 pm – 8 pm</td>
<td>69%-71%</td>
<td>23%-24%</td>
<td>6%-7%</td>
</tr>
</tbody>
</table>

8 am – 9 am: 12.7 AT, 9.8 AT+MT, 5.6 MT
3 pm – 4 pm: 13.3 AT, 9.9 AT+MT, 8.4 MT
4 pm – 8 pm: 14.2 AT, 16.7 AT+MT, 14.8 MT

BEATS Student Survey (n=314)
## Study Strengths and Limitations

### Strengths

- Objective measures of PA
- Differentiated transport modes
- PA recorded at different time intervals

### Limitations

- Cross-sectional study
- No gender differences examined
Conclusion

☑ AT to schools accumulated more physical activity compared to MT.

☑ AT to schools provide opportunities to increase daily physical activity levels in adolescents.

☑ Future interventions:
  • Encourage passive commuters to combine active and motorised forms of transport.
  • Promote other supplementary forms of physical activities during weekends and late after school hours.
Acknowledgments

Sandy Mandic, PhD
John Williams, PhD
Tony Moore, PhD
Charlotte Flaherty, BComm (DCC)
Enrique Garcia Bengoechea, PhD
John Spence, PhD
Debbie Hopkins, PhD (CSAFE)
Gordon Wilson (DSSP)
Tara Duncan, PhD
Susan Sandretto, PhD
Janet Stephenson, PhD (CSAFE)
Ruth Zeinert (GDA)
Andrew Lonie (DCC)

Tessa Pocock
Alex Mintoft-Jones
Ashley Mountfort, BSc
Emily Brook, PGDip
Judy Rodda, PhD
Candice Perring, BPhEd
Daria Gibbons, BSc
Hayley Horwood, BPhEd
Claire Hodge, PGDip
Lauren Keaney (Honours student)

Hamish Gould, Nigel Barrett
Volunteers
Schools
Students, parents, teachers and school principals
Thank you!

Art Science Museum

The Merlion

Gardens by the Bay

www.otago.ac.nz/beats
References


