Long-Term Effects of Cycle Skills Training in Children and Adolescents

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29 August 2017
Cycling to School in New Zealand

From 1990 onwards, New Zealand saw a substantial decline in the number of children and adolescents cycling to school.

Numerous factors influence the uptake of cycling for transport, sport and recreation:

- Parental concern over traffic and neighbourhood safety and lack of on-road cycling experience
- Less parental and peer support for cycling
- Cycling perceived as less safe than walking
- Highest risk of cycling-related accidents and injuries
- Bicycle crashes often occur because children and adolescents engage in risky cycling behaviours
South Dunedin Cycling Project (SDCP)

Aims to increase children and adolescents’ participation in cycling for transport, recreation and sport in South Dunedin.
SDCP and Cycle Skills Training (CST) Evaluation

CST courses aim to give children and adolescents the confidence and skills to cycle safely in a trafficked environment.

CST programmes increase **short-term** road safety knowledge, confidence and cycling skills in children and adolescents.
Purpose

To examine the long-term effects of CST on cycling habits, confidence, social support and road safety knowledge in children and adolescents.

Survey at 3 time points:
- Pre-training
- Post-training
- 6-9 Month Follow-up
CST Evaluation: Study Design

- Cycle Skills Training
- Post-training survey (8-10 min)
- Pre-training survey (8-10 min)
- Practical Skills Assessment

Follow-up rides
- Follow-up survey (8-10 min)

6-9 months later
<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Pre-training survey</th>
<th>Post-training survey</th>
<th>Follow-up Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home resources (bike ownership; bike equipment)</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Habits of cycling for recreation, transportation and sport</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Cycling confidence</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Social support for cycling</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Road safety knowledge</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
# Study Sample

<table>
<thead>
<tr>
<th>Total sample</th>
<th>n=91</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Age (years)</td>
<td>11.8 ± 1.8</td>
</tr>
<tr>
<td>School</td>
<td></td>
</tr>
<tr>
<td>Primary/intermediate (children)</td>
<td>52</td>
</tr>
<tr>
<td>Secondary (adolescents)</td>
<td>39</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>22</td>
</tr>
<tr>
<td>Girls</td>
<td>69</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>New Zealand European</td>
<td>68</td>
</tr>
<tr>
<td>Maori</td>
<td>12</td>
</tr>
<tr>
<td>Pacific Islands</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
</tr>
</tbody>
</table>
Availability of a Bicycle and Helmet

Bike in good condition, 67.0%

Helmet in good condition, 72.5%
Do Children and Adolescents Cycle More at Follow-Up?

<table>
<thead>
<tr>
<th>How often do you ride your bike</th>
<th>Pre-training</th>
<th></th>
<th>Post-training</th>
<th></th>
<th>Follow-up</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=91</td>
<td>n=91</td>
<td>n=91</td>
<td></td>
<td>n=91</td>
<td></td>
</tr>
<tr>
<td>I don't have a bike</td>
<td>10</td>
<td>11.0</td>
<td>11</td>
<td>12.1</td>
<td>13</td>
<td>14.3</td>
</tr>
<tr>
<td>Never</td>
<td>7</td>
<td>7.7</td>
<td>13</td>
<td>14.3</td>
<td>9</td>
<td>9.9</td>
</tr>
<tr>
<td>A few times a year</td>
<td>25</td>
<td>27.5</td>
<td>19</td>
<td>20.9</td>
<td>20</td>
<td>22.0</td>
</tr>
<tr>
<td>About once a month</td>
<td>25</td>
<td>27.5</td>
<td>21</td>
<td>23.1</td>
<td>24</td>
<td>26.4</td>
</tr>
<tr>
<td>At least once a week</td>
<td>20</td>
<td>22.0</td>
<td>18</td>
<td>19.8</td>
<td>21</td>
<td>23.1</td>
</tr>
<tr>
<td>Every day</td>
<td>4</td>
<td>4.4</td>
<td>9</td>
<td>9.9</td>
<td>4</td>
<td>4.4</td>
</tr>
</tbody>
</table>

No substantial effects on cycling behaviour
### Cycling Habits in the Past Week

<table>
<thead>
<tr>
<th>Activity</th>
<th>Pre-training n=91</th>
<th>Follow-up n=91</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean±SD (days/week)</td>
<td>Never (%)</td>
</tr>
<tr>
<td>Bike to school?</td>
<td>0.40 ± 1.13</td>
<td>85.7%</td>
</tr>
<tr>
<td>Bike to see friends?</td>
<td>0.41 ± 0.98</td>
<td>80.2%</td>
</tr>
<tr>
<td>Go for a bike ride (alone or with friends)?</td>
<td>1.03 ± 1.15</td>
<td>52.7%</td>
</tr>
<tr>
<td>Bike for sport or recreation?</td>
<td>0.43 ± 1.11</td>
<td>81.1%</td>
</tr>
</tbody>
</table>

No substantial effects on cycling habits
Preference for Cycling to School

No substantial changes in habits and preferences

Currently cycle to school

<table>
<thead>
<tr>
<th></th>
<th>Pre-training</th>
<th>Post-training</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5%</td>
<td>5.5%</td>
<td>4.4%</td>
<td></td>
</tr>
</tbody>
</table>

Prefer cycling to school

<table>
<thead>
<tr>
<th></th>
<th>Pre-training</th>
<th>Post-training</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.4%</td>
<td>33.0%</td>
<td>23.1%</td>
<td></td>
</tr>
</tbody>
</table>
Cycling Confidence

Proportion of children and adolescents who perceived being “very confident” to cycle

In a park or reserve:
- Pre-training: 69.2%
- Post-training: 82.4%
- Follow-up: 87.9%

On the road:
- Pre-training: 40.0%
- Post-training: 45.1%
- Follow-up: 65.9%

To school:
- Pre-training: 48.3%
- Post-training: 52.2%
- Follow-up: 58.0%
Social Support for Cycling

Pre-training

Parents

- Not at all: 28.7%
- A little: 24.1%
- Some: 24.1%
- Very much: 23.0%

Follow-up

- Not at all: 64.4%
- A little: 14.9%
- Some: 16.1%
- Very much: 23.0%

Friends

- Not at all: 65.5%
- A little: 21.8%
- Some: 8.0%
- Very much: 4.6%

*p<0.001

p=0.011

Less parental support and no significant change in peer support
Knowledge of Road Rules

18 Knowledge Questions, including:

What does a GIVE WAY sign mean at an intersection? (√)
- Stop
- Slow down and be ready to stop and give way
- Keep going – a give way sign is for cars only
- I don’t know

Which road user gives way? (√)
- The cyclist turning right gives way to the car that is turning left
- The car turning left gives way to the cyclist that is turning right

What do these traffic signals mean? (√)
- Red
- Yellow
- Green

Tick the TWO things that the law says you must have on your bike. (√)
- Water bottle
- Red or yellow rear reflector
- Brakes on the front and back wheels
- Drink bottle holder

Tick the ONE picture that shows the right way to wear a helmet. (√)

Which foot should you start with on the ground before riding out from the kerb on your bike? (√)
- Left foot
- Right foot
- Don’t know

How far from the edge of the kerb or a parked car should you usually ride your bike? (√)
- 2 metres
- 0.5 metre
- 1 metre
- Don’t know
Knowledge of Road Rules

Average knowledge score from 18 Knowledge Questions:

- Pre-training: 84.2%
- Post-training: 92.5%
- Follow-up: 93.2%

Retained knowledge of road rules and cycling-related laws from post-training to follow-up.
Summary

Six to nine months after participation in CST, children and adolescents:

- Did not change cycling habits
- Reported less parental support and no change in peer support for cycling
- Perceived further increase in cycling confidence
- Retained knowledge of road rules
Recommendations

To ensure the long-term impact, future CST interventions should:

• Involve follow-up activities,
• Engage parents, and
• Encourage cycling for transport and recreation in both children and adolescents
Acknowledgements

- Rose Dovey (SDCP Project Manager)
- Scarlett Hagen
- Charlotte Flaherty
- Dr Sandra Mandic
Thank you!

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