

# IMPACT AND EFFECTIVENESS

## TABLE 37

### **Provision of Drinking Water**

Effectiveness Tables

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# EFFECTIVENESS TABLES

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<b>International</b>				
<p><b>Author</b> Muckelbauer, Libuda (2009) Germany</p> <p><b>Design</b> Intervention Evaluation Group randomized trial</p> <p><b>Duration</b> Medium August 2006 - June 2007</p>	<p><b>Measures</b> <i>Access to water</i> (presence of water fountains and water bottles)</p> <p><b>Outcome(s) Affected</b> Body mass index, risk and incidence of overweight, water consumption (height and weight, questionnaire)</p>	<p><b>Net Positive for Overweight/obesity in Lower-Income Populations (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Overweight/obesity in Students without an Immigration Background (Provision of Free Drinking Water at School)</b></p> <p><b>Net Neutral for Overweight/obesity in Students with an Immigration Background (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Nutrition in Lower-Income Populations (Provision of Free Drinking Water at School)</b></p> <p><b>Provision of Free Drinking Water at School</b></p> <p><u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> <li>The risk of overweight was significantly reduced in the intervention group, compared with the control group (OR=0.69, 95% CI: 0.48-0.98). The intracluster correlation coefficient for the prevalence of overweight was 0.011.</li> <li>The estimated group difference between intervention and control in BMI SDS changes of -0.004 (95% CI: -0.045-0.036) was not significant (p=0.829), with adjustment for BMI SDS at baseline.</li> <li>Among students without an immigrational background, the risk of being overweight at follow-up was significantly reduced in the intervention group compared to the control group (OR=0.51, 95% CI: 0.31-0.83) after adjustment for baseline prevalence of overweight. There was no intervention effect detected among children with an immigrational background.</li> <li>The incidence of overweight during the follow-up period was reduced significantly in the intervention group among students without an immigrational background (adjusted OR= 0.46, 95% CI: 0.26-0.80), but not among children with an immigrational background.</li> </ol> <p><u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>(n=1987) Changes in water consumption were higher in the intervention group compared with the controls, with an estimated difference of 1.1 glasses per day (95% CI: 0.7-1.4, p&lt;0.001), adjusted for baseline consumption and migrational background.</li> <li>(n=1987) No intervention effect on juice and soft drink consumption after adjustment for baseline and migrational background (p=0.50 &amp; p=0.406, respectively).</li> </ol>	<p><b>Effective for Overweight/obesity in Lower-income Populations</b></p> <p><b>Effective for Overweight/obesity in Students Without an Immigrational Background</b></p> <p><b>Not Effective for Overweight/obesity in Students With an Immigrational Background</b></p> <p><b>Effective for Nutrition in Lower-Income Populations</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Medium</p> <p>Effect size = Net positive for overweight/obesity in lower income populations and students without an immigrational background, net neutral for overweight/obesity in students with an immigration background, and net positive for nutrition in the study population</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>
<p><b>Author</b> Loughridge, Barratt (2005) United Kingdom</p> <p><b>Design</b> Intervention Evaluation Non-randomized trial</p> <p><b>Duration</b> Low One month (Feb. 2003)</p>	<p><b>Measures</b> <i>Access to water</i> (presence of water coolers)</p> <p><b>Outcome(s) Affected</b> Water consumption and purchase of soft drinks (flow meters, sales data)</p>	<p><b>Net Positive for Nutrition in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>Neutral for Purchasing Behavior in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>Provision of Free Drinking Water at School</b></p> <p><u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>The average volume of water consumed by the students in Intervention school one (water and promotion), was greater than that consumed in both Intervention school two (water only) and in the control school (no water), p=0.05.</li> </ol> <p><u>PURCHASING BEHAVIOR:</u></p> <ol style="list-style-type: none"> <li>The volume of soft drinks purchased by the students remained relatively constant in all three schools over time. Slightly larger volumes of soft drinks were purchased in the control school (87 mL/student/day at the end of the monitoring period) as compared with the water only school (57mL/student/day) and the water and promotion school (43mL/student/day); not statistically significant.</li> </ol>	<p><b>Somewhat Effective for Nutrition in the Study Population</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Low</p> <p>Effect size = Net positive for nutrition in the study population</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Haerens, Deforche (2006); Haerens, De Bourdeauduij (2007); Haerens, De Bourdeauduij (2006); Haerens, Cerin (2007); Haerens, Cerin (2007); Haerens, Deforche (2006)</p> <p>Belgium</p> <p><b>Design</b> Intervention Evaluation</p> <p>Group randomized trial</p> <p><b>Duration</b> High</p> <p>2 school years</p>	<p><b>Measures</b> <i>Access to affordable healthy foods and beverages (offering free drinking water through fountains, pricing bottled water cheaper than soft drinks, offering fruit for dessert, and reducing prices of fruits and vegetables)</i></p> <p><b>Outcome(s) Affected</b> Overweight/obesity (height and weight to compute BMI), dietary consumption (food frequency questionnaire), physical activity (accelerometers, physical activity questionnaire)</p>	<p><b>Net Positive for Overweight/obesity in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Overweight/obesity in Girls (Provision of Free Drinking Water at School)</b></p> <p><b>Net Neutral for Overweight/obesity in Boys (Provision of Free Drinking Water at School)</b></p> <p><b>Net Neutral for Nutrition in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Nutrition in Girls (Provision of Free Drinking Water at School)</b></p> <p><b>Net Neutral for Nutrition in Boys (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Physical Activity in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Physical Activity in Girls (Provision of Free Drinking Water at School)</b></p> <p><b>Net Positive for Physical Activity in Boys (Provision of Free Drinking Water at School)</b></p> <p><b>Provision of Free Drinking Water at Schools</b></p> <p><u>OVERWEIGHT/OBESITY:</u> <i>After Two Years</i></p> <ol style="list-style-type: none"> <li>1. For all analyses, variance at the school level was not significant (all <math>z &lt; 1.59</math>).</li> <li>2. For girls there was a significantly lower increase in BMI (from <math>20.23 \pm 3.95</math> to <math>21.34 \pm 3.83</math>) in the intervention with parent group compared to control (from <math>19.12 \pm 3.50</math> to <math>20.78 \pm 3.66</math>), <math>F=12.52</math>, <math>p &lt; 0.05</math>.</li> <li>3. For girls there was a significantly lower increase in BMI z score (from <math>0.24 \pm 1.11</math> to <math>0.24 \pm 1.06</math>) in the intervention with parent group, compared to control (from <math>-0.03 \pm 1.05</math> to <math>0.14 \pm 1.00</math>), <math>F=8.61</math>, <math>p &lt; 0.05</math>.</li> <li>4. In addition, there was a significantly lower increase in BMI z score (from <math>0.24 \pm 1.11</math> to <math>0.24 \pm 1.06</math>) in the intervention with parent group, compared to intervention no parent group (from <math>0.28 \pm 0.97</math> to <math>0.35 \pm 0.96</math>), <math>F=2.68</math>, <math>p=0.05</math>.</li> <li>5. In boys, no significant positive intervention effects were found.</li> <li>6. BMI z-score increased significantly more in schools with low levels of implementation, when compared with schools with medium (<math>F=5.03</math>, <math>p &lt; 0.05</math>) and high (<math>F=2.80</math>, <math>p &lt; 0.05</math>) levels of implementation. After 2 years of the intervention, BMI z-score increased with 0.12 units in the schools with low levels of implementation and with 0.06 and 0.09 units, respectively, in schools with medium and high levels of implementation.</li> </ol> <p><u>NUTRITION:</u> <i>After One Year</i></p> <ol style="list-style-type: none"> <li>7. The intervention was not effective in increasing self reported fruit intake and water consumption or decreasing soft drink consumption.</li> <li>8. Fat intake decreased significantly more in girls in the intervention with parent group, compared to the intervention no parent group (<math>F=6.1</math>, <math>p &lt; 0.05</math>) and control group (<math>F=17.3</math>, <math>p &lt; 0.001</math>).</li> <li>9. Percentage of energy from fat also decreased significantly more in girls in the intervention with parent group, compared to the intervention no parent group (<math>F=3.9</math>, <math>p &lt; 0.05</math>) and control group (<math>F=16.7</math>, <math>p &lt; 0.001</math>)</li> <li>10. No significant effect for fat intake or percentage of energy from fat among boys.</li> </ol> <p><i>After Two Years</i></p> <ol style="list-style-type: none"> <li>11. In year 2 for girls, decreases in fat intake were higher in the intervention groups (<math>-20g/day</math>) when compared to control group (<math>-10g/day</math>), <math>F=5.8</math>, <math>p &lt; 0.05</math>. Percentage of energy from fat decreased by 9% in the intervention group and 5% in the control group (<math>F=13.3</math>, <math>p &lt; 0.001</math>).</li> </ol> <p><u>PHYSICAL ACTIVITY:</u> <i>After One Year</i></p> <ol style="list-style-type: none"> <li>12. Based on the physical activity questionnaire, the intervention with parent group increased their total physical activity by 9 min/day (95% CI: 2.9, 15.2; <math>p=0.004</math>) more than did the control group.</li> <li>13. Based on the physical activity questionnaire, school related PA increased significantly in the two intervention groups (<math>+6.4</math> min/day, <math>d=0.40</math> with parent support group; <math>+4.5</math> min/day, <math>d=0.29</math> without parent support group) compared to controls (no change), <math>p &lt; 0.05</math> for both.</li> <li>14. Based on the physical activity questionnaire, girls leisure time active transportation remained stable in the no parent intervention group, while it decreased on average 4 minutes daily in the control group (<math>F=12.1</math>, <math>p &lt; 0.001</math>, <math>d=0.28</math>). In boys, there were no significant differences. (continued next page)</li> </ol>	<p><b>Effective for Overweight/obesity in the Study Population</b></p> <p><b>Effective for Overweight/obesity in Girls</b></p> <p><b>Not Effective for Overweight/obesity in Boys</b></p> <p><b>Not Effective for Nutrition in the Study Population</b></p> <p><b>Effective for Nutrition in Girls</b></p> <p><b>Not Effective for Nutrition in Boys</b></p> <p><b>Effective for Physical Activity in the Study Population</b></p> <p><b>Effective for Physical Activity in Girls</b></p> <p><b>Effective for Physical Activity in Boys</b></p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = Net positive for overweight/obesity in the study population and girls, net neutral for overweight/obesity in boys, net neutral for nutrition in the study population and boys, net positive for nutrition in girls, and net positive for physical activity in the study population, girls, and boys</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>

(Continued from previous study)

PHYSICAL ACTIVITY (RESULTS CONTINUED):

15. Based on the physical activity questionnaire, significant differences were also found between the intervention with parent group and the control group on changes in active transportation to/from school (2.1 min/day, 95% CI: 0.6, 3.6;  $p=0.006$ ) and changes in school-related sporting activities (2.1 min/day, 95% CI: 0.5, 3.7;  $p=0.012$ ). No significant differences were found between the control group and intervention with no parent group.
16. Based on accelerometry data, MVPA increased an average of 4 min. daily in the intervention with parent group, and decreased 7 min. daily in the control group ( $F=5.1$ ,  $p\leq 0.05$ ;  $d=0.46$ ).
17. Based on accelerometer data, PA of light intensity decreased an ave. of 21 min daily in the intervention with parent group and decreased by 57 min on ave. daily in the control group ( $F=5.1$ ,  $p\leq 0.05$ ;  $d=0.54$ ).

*After Two Years*

18. In boys, school-related physical activity increased significantly more in the intervention groups (from  $18.3 \pm 18.7$  to  $25.2 \pm 21.4$ ) compared with the control group (from  $22.6 \pm 14.8$  to  $23.8 \pm 16.5$ ),  $F=3.4$ ,  $p<0.05$ .
19. For boys, accelerometer data revealed a trend for significant lower decreases in physical activity of light intensity in the intervention groups (-6 min/day) compared with the control group (-39 min/day),  $F=8.6$ ,  $p<0.001$ .
20. Based on accelerometer data for boys, MVPA remained stable in the intervention group, but significantly decreased (-18 min/day) in the control group ( $F=3.5$ ,  $p<0.08$ ).
21. In girls, time spent in physical activity of light intensity decreased significantly less in the intervention groups (-2 min/day) compared with the control group (-20 min/day),  $F=4.6$ ,  $p<0.05$ .

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p><b>Author</b> Laurence, Peterken (2007) Melbourne, Australia</p> <p><b>Design</b> Intervention Evaluation Time series study</p> <p><b>Duration</b> High 2 years</p>	<p><b>Measures</b> <i>Access to healthy food and beverage options</i> (provision of bottled water to students and class-time fruit snack breaks)</p> <p><b>Outcome(s) Affected</b> Fruit, water and sweet drink consumption (lunchbox audits)</p>	<p><b>Net Positive for Nutrition to School in Lower-income Children (Provision of Free Drinking Water at School)</b></p> <p><b>Provision of Free Drinking Water at School</b> <u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>The increases in the proportion of children drinking water were inversely related to the reductions observed in the proportion of children with sweetened drinks, including cordials, soft drinks, and fruit juices. Reductions between 8% and 38% were observed among all schools in proportion of children bringing sweet drinks or ordering them through canteen lunch (School A and D: <math>p &lt; 0.001</math>; School C: <math>p &lt; 0.01</math>; School B: not significant).</li> <li>All schools recorded increases between 15% and 60% in the proportion of children bringing filled water bottles to school for up to 2 years (<math>p &lt; 0.001</math>).</li> </ol>	<p><b>Effective for Nutrition in Lower-income Children</b></p> <p>Study design = Intervention evaluation</p> <p>Effect size = Net positive for nutrition in lower-income children</p>	<p><b>Maintenance</b> Not Reported</p> <p><b>Sampling / Representativeness</b> Not Reported</p>
<p><b>Author</b> Kaushik, Mullee (2007) United Kingdom</p> <p><b>Design</b> Association</p> <p>Cross-sectional study</p> <p><b>Duration</b> Not Applicable</p>	<p><b>Measures</b> <i>Access to water</i> (water and water bottles)</p> <p><b>Outcome(s) Affected</b> Water consumption (direct observation, weight of fluid containers before and after use)</p>	<p><b>Positive Association for Nutrition in the Study Population (Provision of Free Drinking Water at School)</b></p> <p><b>(Assumption: Provision of drinking water leads to increased consumption of water and decreased consumption of sugared beverages, which leads to lower overweight and obesity.)</b></p> <p><b>Provision of Free Drinking Water at School</b> <u>NUTRITION:</u></p> <ol style="list-style-type: none"> <li>Only 29% of children achieved a minimum desired fluid intake.</li> <li>Year 2 (ages 6-7) free access schools had higher total fluid intake (ratio of geometric means = 1.55, 95% CI: 1.01-2.38, <math>p = 0.046</math>) compared with prohibited access schools.</li> <li>Year 5 (ages 9-10) free access schools had higher total fluid intake compared with prohibited access schools (ratio of geometric means = 2.38, 95% CI: 1.36-4.15, <math>p = 0.001</math>) and limited access schools (ratio of geometric means = 2.23, 95% CI: 1.26-4.00, <math>p = 0.003</math>).</li> <li>For water intake alone, Year 2 (ages 6-7) and Year 5 (ages 9-10) children had higher intakes both in free access (<math>p = 0.001</math>) and limited access (<math>p &lt; 0.001</math>) schools compared to prohibited access schools.</li> <li>Year 5 (ages 9-10) free access schools had decreased consumption of flavored alternatives compared with prohibited access schools (<math>p = 0.019</math>).</li> </ol>	<p><b>Positive Association for Nutrition in the Study Population</b></p> <p>Study design = Association</p> <p>Effect size = Positive association for nutrition in the study population</p>	<p><b>Maintenance</b> Not Applicable</p> <p><b>Sampling / Representativeness</b> Not Applicable</p>

# IMPACT TABLES

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<b>International</b>						
<p><b>Author</b> Muckelbauer, Libuda (2009) Germany</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = High Each 2nd and 3rd grade child in the intervention schools received the intervention. All children in the schools were exposed to the new water fountains.</p> <p><b>High-Risk Population</b> High 6-10 year olds, Urban, Lower income Schools had to be located in deprived areas with unemployment rate of 15% or greater, proportion of social welfare recipients of 5% or greater, and proportion of non-German residents of 5% or greater (Note: The specific percentage of population that were lower-income was not reported, but the authors stated that they were targeting a lower-income population.)</p>	<p><b>Representative</b> Not Reported</p> <p><b>Potential Population Reach</b> More Evidence Needed Participation = Not reported Exposure = High Representativeness = Not reported</p> <p><b>Potential High Risk Population Reach</b> More Evidence Needed High-risk population = High Representativeness = Not reported</p>	<p><b>Intervention Components</b> Complex Provision of cooled, filtered, plain or optionally carbonated water through water fountains in schools</p> <p><b>COMPLEX:</b> 1. Students provided plastic water bottle 2. Four 45 minute educational classroom lessons 3. Motivational unit (booster sessions) to promote sustained increase in water consumption</p> <p><b>Feasibility</b> Intervention Feasibility = Low Policy Component Feasibility = High Intervention activities: Provision of water fountains in schools, plastic water bottles for students, 45 minute educational classroom lessons, booster education sessions Specialize expertise: Not reported Resources needed: Personnel to provide lessons, water fountains, water bottles, curriculum booklets Costs: Not reported</p> <p><b>Implementation Complexity</b> High Intervention components = Complex Feasibility = High</p>	<p><b>Population Impact</b> More Evidence needed Effectiveness = Not reported for the general population Potential population reach = More evidence needed Implementation complexity = High</p> <p><b>High-risk Population Impact</b> More Evidence Needed Effectiveness = Effective for overweight/obesity and nutrition in lower income populations and for overweight/obesity in students without an immigration background; not effective for overweight/obesity in students with an immigration background Potential high-risk population reach = More evidence needed Implementation complexity = High</p> <p><b>Sustainability</b> Not Reported</p>	Not Reported	<p>1. The daily water flow (average volume of water supplied per participant per school day from the fountains) decreased from 412 mL at month 2 to 223 mL within 3 months (p&lt;0.001). After participants received a new water bottle at measurement point 3, the daily water flow increased significantly to 400 mL (p&lt;0.001). The daily water flow then decreased to 268 mL at the follow-up assessment (p&lt;0.001).</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Loughridge, Barratt (2005) United Kingdom</p>	<p><b>Participation/ Potential Exposure</b> Participation = Not Reported Exposure = High All children in the intervention schools were exposed to the intervention.</p> <p><b>High-Risk Population</b> Low 11-18 year olds Intervention school one = 35.6% entitled to free school meals Intervention school two = 21.2% entitled to free school meals Control school = 21.3% entitled to free school meals</p>	<p><b>Representative</b> Not Reported</p> <p><b>Potential Population Reach</b> More Evidence Needed Participation = Not reported Exposure = High Representativeness = Not reported</p> <p><b>Potential High Risk Popluation Reach</b> More Evidence Needed High-risk population = Low Representativeness = Not reported</p>	<p><b>Intervention Components</b> Complex Provision of free cooled water at school through placement of two water coolers inside the school cafeteria (both intervention schools)</p> <p><b>COMPLEX:</b> 1. Education about the benefits of drinking water in classrooms (intervention school one only) 2. Promotional materials, assemblies and materials given to students (intervention school one only)</p> <p><b>Feasibility</b> Intervention Feasibility = Low Policy Component Feasibility = High Intervention activities: Water coolers placed in the school cafeteria, educational curriculum, promotional materials (posters), student assemblies, educational materials to students Specialized expertise: Not reported Resources needed: Water coolers, promotional materials (posters, pencils, worksheets, water bottles, cups), a basketball sports personality for student assemblies, personnel to deliver the health lessons Costs: Not reported</p> <p><b>Implementation Complexity</b> High Intervention components = Complex Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Somewhat effective for nutrition in the study population Potential population reach = More evidence needed Implementation complexity = High</p> <p><b>High-risk Population Impact</b> More Evidence Needed Effectiveness = Not reported for high-risk populations Potential high-risk population reach = More evidence needed Implementation complexity = High</p> <p><b>Sustainability</b> Yes The control school placed a number of water coolers around the school after the intervention as a result of the dissemination of the focus group data and staff motivation.</p>	<p>Not Reported</p>	<p>1. Based on the focus groups with control students post-intervention, students viewed their existing water provision (cup and jug) as poor. Some members of the group were aware of feelings of being mildly dehydrated and were concerned that palatable water needed to be purchased.</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Laurence, Peterken (2007) Melbourne, Australia</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = High All children in the 4 primary schools were exposed to the intervention. <b>High-Risk Population</b> High 5-10 year olds, Urban, Lower-income Schools A,B &amp; D were 60-90% culturally/linguistically diverse (mainly Vietnamese)</p>	<p><b>Representative</b> Not Reported <b>Potential Population Reach</b> More Evidence Needed Participation = Not Reported Exposure = High Representativeness = Not reported <b>Potential High Risk Population Reach</b> More Evidence Needed High-risk population = High Representativeness = Not reported</p>	<p><b>Intervention Components</b> Multi-Component Fresh Kids Program – Encouragement to drink water during class (and prohibition of sweet drinks) and students were provided water bottles <b>MULTI-COMPONENT:</b> 1. School policy providing scheduled class-time fruit breaks <b>COMPLEX:</b> 1. Nutrition education in association with seasonal “Fresh Fruit Weeks” 2. ‘Monthly nutrition newsletter distributed to parents <b>Feasibility</b> Intervention Feasibility = Low Policy Component Feasibility = High Intervention activities: Scheduled class-time fruit breaks, encouragement to drink water along with prohibition of sweet drinks at school, provided students with water bottles, nutrition education, monthly parent newsletter Specialized expertise: Community dietician to coordinate the program planning, implementation and evaluation Resources needed: Dietician to coordinate the program, teachers to implement the class breaks and deliver the curriculum, nutrition education materials, newsletters, water bottles Costs: Not reported <b>Implementation Complexity</b> High Intervention components = Multi-component Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Not reported Potential population reach = More evidence needed Implementation complexity = High <b>High-risk Population Impact</b> More Evidence Needed Effectiveness = Effective for nutrition in lower-income children Potential high-risk population reach = More evidence needed Implementation complexity = High <b>Sustainability</b> Yes Fresh Kids continues to be supported by the Telstra Foundation. Fresh Kids program has been expanded to over 35 primary schools across Melbourne’s west suburbs.</p>	<p><b>Provision of Fruits and Vegetables</b> <b>NUTRITION:</b> 1. 41% mean increase (increases between 25-50%) in proportion of children bringing fresh fruit for up to 2 years after initial implementation of Fresh Kids program (p&lt;0.001), across all schools observed.</p>	<p>1. A potential objection to the free availability of water in class is that children may need to leave class more frequently to use the restroom. However, no trend was observed between water access and frequency of restroom visits (p=0.605).</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Haerens, Deforche (2006); Haerens, De Bourdeauduij (2007); Haerens, De Bourdeauduij (2006); Haerens, Cerin (2007); Haerens, Cerin (2007); Haerens, Deforche (2006) Belgium</p>	<p><b>Participation/Potential Exposure</b> Participation = Not Reported Exposure = High All children in the 10 intervention schools were exposed to the nutrition and physical activity policies; all children in the 5 intervention with parent schools were exposed to the parent component.</p> <p><b>High-Risk Population</b> Not Reported (for intervention population) 11-18 year olds 68% lower income (evaluation sample)</p>	<p><b>Representative</b> Not Reported</p> <p><b>Potential Population Reach</b> More Evidence Needed Participation = Not reported Exposure = High Representativeness = Not reported</p> <p><b>Potential High Risk Population Reach</b> More Evidence Needed High-risk population = Not reported Representativeness = Not reported</p>	<p><b>Intervention Components</b> Multi-Component School policy to increase healthy food choices by: 1. Offering water for free through drinking fountains 2. Selling fruit at school for a very low price or for free at least once a week 3. Pricing water lower than soft drinks 4. Offering fruit for dessert during lunch</p> <p><b>MULTI-COMPONENT:</b> 1. Physical activity (PA) component to increase levels of moderate to vigorous physical activity (MVPA) to at least 60 min/day. Activities included PA during breaks using varied content to reach all students, provision of extra sports materials, encouragement of active transportation to school, and a computer-tailored PA classroom lesson.</p> <p><b>COMPLEX:</b> 1. Computer-tailored classroom lesson on fat and fruit intake 2. Parent component including interactive meeting on healthy living, newsletters/school paper 3 times/yr and adult computer-tailored intervention for fat intake and PA</p> <p><b>Feasibility</b> Intervention Feasibility = Low Policy Components Feasibility = High Intervention activities: Changes in food prices, offering additional fruit at school, physical activity breaks, provision of extra sports materials, computer-tailored classroom lessons (physical activity and health eating), interactive parent meetings, parent newsletters, computer-tailored lessons for parents Specialized expertise: Development of a workgroup to guide intervention delivery Resources needed: computers, CD-ROM for the adult computer intervention, sports materials (jump ropes, balls etc.), funds for subsidizing fruit and water, materials for meetings with parents, newsletters for parents Costs: Not reported</p> <p><b>Implementation Complexity</b> High Intervention components = Multi-component Feasibility = High</p>	<p><b>Population Impact</b> More Evidence Needed Effectiveness = Effective for overweight/obesity in the study population and girls, not effective for overweight/obesity in boys, not effective for nutrition in the study population and boys, effective for nutrition in girls, and effective for physical activity in the study population, girls, and boys Potential population reach = More evidence needed Implementation complexity = High</p> <p><b>High-risk Population Impact</b> More Evidence Needed Effectiveness = Not reported for high-risk populations Potential high-risk population reach = More evidence needed Implementation complexity = High</p> <p><b>Sustainability</b> Not Reported</p>	<p><b>Food Pricing -AND- School Food and Beverage Policies OVERWEIGHT/OBESITY:</b> <i>After Two Years</i> 1. For all analyses, variance at the school level was not significant (all <math>z &lt; 1.59</math>). 2. For girls there was a significantly lower increase in BMI (from <math>20.23 \pm 3.95</math> to <math>21.34 \pm 3.83</math>) in the intervention with parent group compared to control (from <math>19.12 \pm 3.50</math> to <math>20.78 \pm 3.66</math>), <math>F=12.52</math>, <math>p&lt;0.05</math>. 3. For girls there was a significantly lower increase in BMI z-score (from <math>0.24 \pm 1.11</math> to <math>0.24 \pm 1.06</math>) in the intervention with parent group, compared to control (from <math>-0.03 \pm 1.05</math> to <math>0.14 \pm 1.00</math>), <math>F=8.61</math>, <math>p&lt;0.05</math>. 4. In addition, there was a significantly lower increase in BMI z-score (from <math>0.24 \pm 1.11</math> to <math>0.24 \pm 1.06</math>) in the intervention with parent group, compared to intervention no parent group (from <math>0.28 \pm 0.97</math> to <math>0.35 \pm 0.96</math>), <math>F=2.68</math>, <math>p=0.05</math>. 5. In boys, no significant positive intervention effects were found. 6. BMI z-score increased significantly more in schools with low levels of implementation, when compared with schools with medium (<math>F=5.03</math>, <math>p&lt;0.05</math>) and high (<math>F=2.80</math>, <math>p&lt;0.05</math>) levels of implementation. After 2 years of the intervention, BMI z-score increased with 0.12 units in the schools with low levels of implementation and with 0.06 and 0.09 units, respectively, in schools with medium and high levels of implementation.</p> <p><b>NUTRITION:</b> <i>After One Year</i> 7. The intervention was not effective in increasing self reported fruit intake and water consumption or decreasing soft drink consumption. 8. Fat intake decreased significantly more in girls in the intervention with parent group, compared to the intervention no parent group (<math>F=6.1</math>, <math>p&lt;0.05</math>) and control group (<math>F=17.3</math>, <math>p&lt;0.001</math>). 9. Percentage of energy from fat also decreased significantly more in girls in the intervention with parent group, compared to the intervention no parent group (<math>F=3.9</math>, <math>p&lt;0.05</math>) and control group (<math>F=16.7</math>, <math>p&lt;0.001</math>). 10. No significant effect for fat intake or percentage of energy from fat among boys.</p> <p><i>After Two Years</i> 11. In year 2 for girls, decreases in fat intake were higher in the intervention groups (<math>-20g/day</math>) when compared to control group (<math>-10g/day</math>), <math>F=5.8</math>, <math>p&lt;0.05</math>. Percentage of energy from fat decreased by 9% in the intervention group and 5% in the control group (<math>F=13.3</math>, <math>p&lt;0.001</math>).</p> <p><b>PHYSICAL ACTIVITY:</b> <i>After One Year</i> 12. Based on the physical activity questionnaire, the intervention with parent group increased their total physical activity by 9.0 min/day (95% CI: 2.9, 15.2; <math>p=0.004</math>) more than did the control group. (continued next page)</p>	<p>Not Reported</p>

(Continued from previous study)

13. Based on the physical activity questionnaire, school related PA increased significantly in the two intervention groups (+6.4 min/day,  $d=0.40$  with parent support group; +4.5 min/day,  $d=0.29$  without parent support group) compared to controls (no change),  $p<0.05$  for both.
  14. Based on the physical activity questionnaire, girls leisure time active transportation remained stable in the no parent intervention group, while it decreased on average 4 minutes daily in the control group ( $F=12.1$ ,  $p<0.001$ ,  $d=0.28$ ). In boys, there were no significant differences.
  15. Based on the physical activity questionnaire, significant differences were also found between the intervention with parent group and the control group on changes in active transportation to/from school (2.1 min/day, 95% CI: 0.6, 3.6;  $p=0.006$ ) and changes in school-related sporting activities (2.1 min/day, 95% CI: 0.5, 3.7;  $p=0.012$ ). No significant differences were found between the control group and intervention with no parent group.
  16. Based on accelerometry data, MVPA increased an average of 4 min. daily in the intervention with parent group, and decreased 7 min. daily in the control group ( $F=5.1$ ,  $p\leq 0.05$ ;  $d=0.46$ ).
  17. Based on accelerometer data, PA of light intensity decreased an ave. of 21 min daily in the intervention with parent group and decreased by 57 min on ave. daily in the control group ( $F=5.1$ ,  $p\leq 0.05$ ;  $d=0.54$ ).
- After Two Years*
18. In boys, school-related physical activity increased significantly more in the intervention groups (from  $18.3 \pm 18.7$  to  $25.2 \pm 21.4$ ) compared with the control group (from  $22.6 \pm 14.8$  to  $23.8 \pm 16.5$ ),  $F=3.4$ ,  $p<0.05$ .
  19. For boys, accelerometer data revealed a trend for significant lower decreases in physical activity of light intensity in the intervention groups (-6 min/day) compared with the control group (-39 min/day),  $F=8.6$ ,  $p<0.001$ .
  20. Based on accelerometer data for boys, MVPA remained stable in the intervention group, but significantly decreased (-18 min/day) in the control group ( $F=3.5$ ,  $p<0.08$ ).
  21. In girls, time spent in physical activity of light intensity decreased significantly less in the intervention groups (-2 min/day) compared with the control group (-20 min/day),  $F=4.6$ ,  $p<0.05$ .
- (Note: results for multiple strategy categories are identical (reported together to save space))

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p><b>Author</b> Kaushik, Mullee (2007) United Kingdom</p>	<p><b>Participation/Potential Exposure</b> Not Applicable</p> <p><b>High-Risk Population</b> Not Applicable</p> <p>Only cross-sectional data provided. 6-10 year olds</p>	<p><b>Representative</b> Not Applicable</p> <p><b>Potential Population Reach</b> Not Applicable</p> <p><b>Potential High Risk Population Reach</b> Not Applicable</p>	<p><b>Intervention Components</b> Not Applicable</p> <p>Only cross-sectional data provided.</p> <p>“Water is Cool in School” campaign - School policies to increase access to water during class.</p> <p>Three policies were compared: 1. ‘Free access.’ Water permitted on desk at arms’ length. 2. ‘Limited access.’ Water available in class (i.e., located in water cooler) but children were required to actively request drinks. 3. ‘Prohibited access.’ Drinking in class not permitted.</p> <p><b>Feasibility</b> Not Applicable</p> <p><b>Implementation Complexity</b> Not Applicable</p>	<p><b>Population Impact</b> Not Applicable</p> <p><b>High-risk Population Impact</b> Not Applicable</p> <p><b>Sustainability</b> Not Applicable</p>	<p>Not Reported</p>	<p>1. A potential objection to the free availability of water in class is that children may need to leave class more frequently to use the restroom. However, no trend was observed between water access and frequency of restroom visits (<math>p=0.605</math>).</p>