

IMPACT AND EFFECTIVENESS TABLE 50

School Wellness Policies (Physical Activity)

Effectiveness Tables

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EFFECTIVENESS TABLES

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
United States				
<p>Author Economos, Hyatt (2007); Goldberg, Collins (2009); Economos, Folta (2009)</p> <p>Massachusetts</p> <p>Design Intervention Evaluation</p> <p>Non-randomized trial</p> <p>Duration High</p> <p>3 years</p>	<p>Measures <i>Community and school accessibility</i> (accessible routes, bike racks, physical activity policies, and access to healthier food options)</p> <p>Outcome(s) Affected Overweight/obesity (height and weight [body mass index]) and school and community environment and policy change (direct observation)</p>	<p>Net Positive for Overweight/obesity in the Study Population (School Wellness Policies)</p> <p>School Wellness Policies (Physical Activity)</p> <p><u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> The average change in BMI z-score in the intervention community was -0.1307 (95% CI -0.1836, -0.0778, p=0.02) compared with control 1 and -0.1048 (95% CI -0.1541, -0.0555, p=0.02) compared with control 2 after controlling for baseline BMI z-score, sex, grade, age, race, primary language spoken at home, school and community. In the intervention community, BMI z-score decreased by -0.1005 (95% CI -0.1151, -0.0859, p=0.001), compared with children in the control communities after controlling for baseline covariates. 	<p>Effective for Overweight/obesity in the Study Population</p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = Net positive for overweight/obesity in the study population</p>	<p>Maintenance Not Reported</p> <p>Sampling / Representativeness Not Reported</p>
<p>Author Jordan, Erickson (2008)</p> <p>Utah</p> <p>Design Intervention Evaluation</p> <p>Non-randomized trial</p> <p>Duration Medium</p> <p>June 2005 – May 2006</p>	<p>Measures <i>Healthier school environment</i> (promotion of physical activity and access to fruits and vegetables)</p> <p>Outcome(s) Affected Overweight/obesity (height and weight [body mass index]), physical activity and dietary consumption (parent and student survey)</p>	<p>Neutral for Overweight/obesity in the Study Population (School Wellness Policies)</p> <p>Neutral for Physical Activity in the Study Population (School Wellness Policies)</p> <p>School Wellness Policies (Physical Activity)</p> <p><u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> There was a non-significant rise in BMI z-scores from baseline to follow-up for students in the intervention group ($\Delta = 0.21 \pm 0.47$; p=0.484). Conversely, there was a significant increase in BMI z-scores baseline to follow-up for the control group ($\Delta = 0.53 \pm 0.38$; p<0.05). <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> Both groups increased the days/ week they walked or biked to school over 1 year. However, a significant improvement was observed only for the control group (p<0.001). 	<p>Not Effective for Overweight/obesity in the Study Population</p> <p>Not Effective for Physical Activity in the Study Population</p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = Medium</p> <p>Effect size = Neutral for overweight/obesity and physical activity in the study population</p>	<p>Maintenance Not Reported</p> <p>Sampling / Representativeness Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
<p>Author Belansky, Cutforth (2009) Colorado</p> <p>Design Intervention Evaluation Time series study</p> <p>Duration High 2 years</p>	<p>Measures <i>Healthier school environment</i> (promotion of structured physical activity time during the school week)</p> <p>Outcome(s) Affected Physical activity and changes in school physical activity policies (survey, interview, policy coding)</p>	<p>Net Positive for Physical Activity in the Study Population (School Wellness Policies)</p> <p>School Wellness Policies (Physical Activity)</p> <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> The number of minutes spent in physical education (PE) each week increased by a mean of 14 minutes from 2005 to 2007 ($\beta=14.2$; $p<0.10$). Reported time spent in recess decreased by 3.8 min per day (19 min per week) from 2005 to 2007, ($p<0.10$). The number of principals requiring teachers to allow students to participate in physical education or recess despite bad classroom behavior, missed work or other activities did not increase after the local wellness policy went into effect. (other) Schools whose districts mentioned PE quantity in their wellness policy had no change in PE minutes over time (98.2 min/week in 2005 vs. 98.4 min/week in 2007), whereas schools whose districts did not mention PE quantity increased their PE time by 18 min/week, standard deviation (SD)=45.9. All schools decreased the amount of recess time whether or not recess quantity was included in the local wellness policy. However, the decrease was greater in schools whose districts mentioned recess quantity (-4.5 minutes per day vs. -2.5 minutes per day). Local wellness policies had low “strength” scores in all dimensions and particularly in nutrition guidelines and physical activity, indicating that policies did not include strong wording such as “require” or “mandate.” (other) Schools who developed a committee of individuals from within and outside the school tended to have stronger and more comprehensive policies than those that relied on one lead person to draft the policy. (other) 	<p>Effective for Physical Activity in the Study Population</p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = Net positive for physical activity in the study population</p>	<p>Maintenance Not Reported</p> <p>Sampling / Representativeness Not Reported</p>
<p>Author Heard-Longley, Sneed (2009) United States</p> <p>Design Association Cross-sectional study</p> <p>Duration Not Applicable</p>	<p>Measures <i>Healthier school environment</i> (increase in required daily minutes of physical education in school)</p> <p>Outcome(s) Affected Physical activity and school policy changes (questionnaire)</p>	<p>Positive Association for Physical Activity in the Study Population (School Wellness Policies)</p> <p>School Wellness Policies (Physical Activity)</p> <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> The incorporation of physical education in the classroom increased from 31.7% to 60.6% and required daily minutes of physical education increased from 46% to 68.3%. <p><u>POLICY CHANGE:</u></p> <ol style="list-style-type: none"> Prior to the federal wellness legislation, foodservice directors reported that 37.4% of the wellness components were in place, while following legislation 72.4% of the wellness components were in place. Staff wellness policies in school districts increased from 20.4% to 70.8%. 	<p>Positive Association for Physical Activity in the Study Population</p> <p>Study design = Association</p> <p>Effect size = Positive association for physical activity in the study population</p>	<p>Maintenance Not Applicable</p> <p>Sampling / Representativeness Not Reported</p>

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
International				
<p>Author Macaulay, Paradis (1997); Horn, Paradis (2001); Potvin, Cargo (2003); Jimenez, Receveur (2003); Paradis, Levesque (2005); McComber, Macaulay (1998)</p> <p>Canada</p> <p>Design Intervention Evaluation</p> <p>Non-randomized trial (1994-1996), with cross-sectional follow-up measurements in 1995, 1996, 1998, 1999 and 2000.</p> <p>Duration High 8 years</p>	<p>Measures <i>Healthier school environment</i> (extra physical education class each week, extra physical activity integrated with other daily behaviors, access to healthier food options)</p> <p>Outcome(s) Affected Overweight/obesity (body mass index [BMI] and skinfold thickness), physical activity (questionnaires and 1-mile run/walk test), and dietary consumption (24-hour recall, questionnaire)</p>	<p>Neutral for Overweight/obesity for Native American Children (School Wellness Policies)</p> <p>Neutral for Physical Activity for Native American Children (School Wellness Policies)</p> <p>School Wellness Policies (Physical Activity)</p> <p><u>OVERWEIGHT/OBESITY:</u></p> <ol style="list-style-type: none"> 1. From 1994-1996, children in the intervention community showed significantly less increase in subscapular (36% vs. 65 %) and tricep (35% vs. 62%) skinfold thickness than children in the comparison community (time x community interaction: $p < 0.01$ for both skinfolds); this did not translate into a lower rate of increase in BMI. 2. For girls, independent predictors for skinfold change were baseline skinfold thickness ($r^2 = 0.67$), younger age ($r^2 = 0.01$), watching excessive television ($r^2 = 0.01$), being from the comparison community ($r^2 = 0.02$) and higher relative physical activity ($r^2 = 0.01$), $p < 0.05$ for all. 3. For boys, only baseline subscapular skinfold thickness was a significant predictor of skinfold thickness change ($r^2 = 0.72$, $p < 0.001$). <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> 4. From 1994-1996 children in the intervention community performed worse on the run/walk test (22% deterioration over time), compared to children in comparison community (8% improvement over time). This may be due to a significant decrease in frequency of gym class at school in the intervention community, from 2.84 to 1.85 times/week between 1994-1996, compared to students in the comparison community who reported an increase from 1.71 to 2.18 times/week ($F[1220] = 24.81$; $p < 0.01$). 5. After 2 years in both communities, the frequency of self-reported episodes of at least 15 minutes of physical activity increased by 23%. 	<p>Not Effective for Overweight/obesity for Native American Children (Study Population)</p> <p>Not Effective for Physical Activity for Native American Children (Study Population)</p> <p>Study design = Intervention evaluation</p> <p>Intervention duration = High</p> <p>Effect size = Neutral for physical activity and overweight/obesity for Native American children (study population)</p>	<p>Maintenance</p> <ol style="list-style-type: none"> 1. In 2002 (after 8 years of intervention implementation), students were at a significantly higher risk of having higher BMI (OR=1.37 95% CI: 1.03-1.81) and skinfold thickness (subscapular OR=1.94 95% CI: 1.44-2.63; triceps OR=1.59 95% CI: 1.18-2.12) compared with baseline. Excess risk ranged from 37%-94%. 2. Mean number of physical activities increased, fitness measure improved, and TV watching decreased significantly in 1999 in the intervention community, but all three improvements were lost in 2002. <p>Sampling / Representativeness Not Reported</p>

IMPACT TABLES

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
United States						
<p>Author Economos, Hyatt (2007); Goldberg, Collins (2009); Economos, Folta (2009) Massachusetts</p>	<p>Participation/Potential Exposure Participation = Not Reported Exposure = High</p> <p>All students in the intervention schools were exposed to the school environment changes; students near the SR2S routes (within 1/2 mile from school) were exposed to the SR2S component; community members visiting Shape-Up approved restaurants were exposed to the healthier menus.</p> <p>High-Risk Population Low</p> <p>Urban, 6-9 year olds (target population)</p> <p>Community demographics: 28-36% non-English speaking in the home, 12.5-14.5% living below the poverty level</p> <p>Exposed - 49.6% White, 7.5% Black, 18.2% Hispanic, 9.1% Asian, 15.6% Other</p> <p>Unexposed A - 37.8% White, 25.1% Black, 11.8% Hispanic, 2.3% Asian, 13% Other</p> <p>Unexposed B - 51.7% White, 6.9% Black, 22.8% Hispanic, 7.3% Asian, 11.2% Other</p>	<p>Representative High</p> <p>All students in the intervention schools were exposed.</p> <p>Potential Population Reach High</p> <p>Exposure = High</p> <p>Representativeness = High</p> <p>Potential High Risk Population Reach High</p> <p>High-risk population = Low</p> <p>Representativeness = High</p>	<p>Intervention Components Multi-component</p> <p>Shape –Up Somerville – Expanded pedestrian safety and environmental policies</p> <p><u>MULTI-COMPONENT:</u></p> <ol style="list-style-type: none"> School wellness & community policies to increase the availability of foods of low energy density (emphasis on fruits, vegetables, whole grains and low fat dairy) and decrease the consumption of foods high in fat through modification to the school food service (e.g., vegetarian recipes, salads made daily, fresh food available daily, ice cream available once per week, change in a la carte to meet nutrition standards) Safe Routes to School [SR2S] (school maps, city ped/bike coordinator, bike racks in all elementary schools) Policy change initiatives (Expanded pedestrian safety and environment policies, healthy meeting and event policies, and city employee fitness wellness benefit policies) <p><u>COMPLEX:</u></p> <ol style="list-style-type: none"> Class component: HEAT club in-class curriculum and after-school curriculum (26 lessons) Parent/community outreach: Monthly newsletters, community events, local media outlets and parent forums; Shape Up approved restaurants (must meet criteria on fat, portion size, serving of F&V and healthy food options) <p>Feasibility Intervention Feasibility = Low</p> <p>Policy Feasibility = High</p> <p>Intervention activities: School menu changes, Shape-Up approved restaurants, Safe Routes to School, monthly newsletters, community events, local media initiatives, policy change initiatives, classroom curriculum (HEAT)</p> <p>Specialized expertise: Pedestrian/bike coordinator; training for program leaders of after school programs, food service staff and teachers</p> <p>Resources needed: Personnel/ funds/time to carry out the intervention activities, materials for community events, materials to help recruit restaurants, thermoplastic paint for sidewalks, bike racks, newsletters, posters, tabletop tents, incentives for control schools, new kitchen equipment, media placements, pedestrian/bike coordinator, Safe Routes to School maps</p> <p>Costs: Not reported</p> <p>Implementation Complexity High</p> <p>Intervention components = Multi-component</p> <p>Feasibility = High</p>	<p>Population Impact High Impact for Overweight/obesity in Study Population</p> <p>Effectiveness = Effective for overweight/obesity for study population</p> <p>Potential population reach = High</p> <p>Implementation complexity = High</p> <p>High-risk Population Impact More Evidence Needed</p> <p>Effectiveness for high-risk populations = Not reported</p> <p>Potential high-risk population reach = High</p> <p>Implementation complexity = High</p> <p>Sustainability Yes</p> <p>Research team helped the community secure \$1.5 million from other funding sources to continue activities.</p>	<p>Not Reported</p>	<ol style="list-style-type: none"> Various community-wide policies were developed including: school wellness policy, policies and union contract negotiations that led to enhancements of the school food service, expanded pedestrian safety and environmental policies, healthy meeting and event policy and a city employee fitness wellness benefit 21 restaurants became Shape Up Approved.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p>Author Jordan, Erickson (2008) Utah</p>	<p>Participation/Potential Exposure Participation = Not Reported Exposure = High</p> <p>All children in the intervention schools were exposed to the intervention.</p> <p>High-Risk Population Not Reported (for intervention population)</p> <p>5-10 year olds in grades 1, 3 and 5 at elementary schools (target population)</p> <p>Evaluation samples</p> <p>Gold Medal Schools- 85.8% White, 7.6% Hispanic, 0.4% American Indian/ Alaska Native, 2.8% Native Hawaiian/ Pacific Islander, 0.7% Asian, 2.8% Other</p> <p>Non-Gold Medal Schools- 86.7% White, 7.0% Hispanic, 0.7% American Indian/ Alaska Native, 0.4% Native Hawaiian/ Pacific Islander, 0.7% Asian, 2.1% African American, 2.5% Other</p>	<p>Representative High</p> <p>All children in the intervention schools were exposed.</p> <p>Potential Population Reach High</p> <p>Exposure = High</p> <p>Representativeness = High</p> <p>Potential High Risk Population Reach More Evidence Needed</p> <p>High-risk population = Not reported</p> <p>Representativeness = High</p>	<p>Intervention Components Multi-component</p> <p>The Gold Medal Schools Program – School wellness policy included designated physical activity programs such as Walk Your Child to School Day and the President’s Challenge for physical fitness.</p> <p>MULTI-COMPONENT: 1. School wellness policies to promote fruits and vegetables at school meals</p> <p>COMPLEX: 1. Promotion of fruits and vegetables at breakfast and lunch. 2. The Gold Medal Schools designations (bronze, silver, gold, platinum) represent increasing levels of achievement in implementing school wellness criteria.</p> <p>Feasibility Intervention Feasibility = High Policy Feasibility = High</p> <p>Intervention activities: Additional fruits and vegetables at school meals, additional physical activity opportunities, promotion of fruits and vegetables</p> <p>Specialized expertise: Not reported</p> <p>Resources needed: Funds for additional fruits and vegetables</p> <p>Costs: Not reported</p> <p>Implementation Complexity High</p> <p>Intervention components = Multi-component</p> <p>Feasibility = High</p>	<p>Population Impact No Impact for Overweight/obesity in the Study Population</p> <p>No Impact for Physical Activity in the Study Population</p> <p>Effectiveness = Not effective for overweight/ obesity and physical activity for the study population</p> <p>Potential population reach = High</p> <p>Implementation complexity = High</p> <p>High-risk Population Impact More Evidence Needed</p> <p>Effectiveness for high-risk populations = Not reported</p> <p>Potential high-risk population reach = More evidence needed</p> <p>Implementation complexity = High</p> <p>Sustainability Not Reported</p>	<p>School Wellness Policies (Nutrition) NUTRITION:</p> <p>1. Parent surveys at year one indicated that children in the intervention group drank fewer soft drinks per day than the control group (p=0.008).</p> <p>2. Student surveys revealed that the intervention students drank fewer “soft drinks yesterday” (p=0.085) and ate “more fruits and vegetables yesterday” (p=0.094) than the control students, but results were not statistically significant.</p>	<p>Not Reported</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p>Author Belansky, Cutforth (2009) Colorado</p>	<p>Participation/Potential Exposure Participation = Not Reported Exposure = High All children in the Colorado schools were potentially exposed to the local wellness policy.</p> <p>High-Risk Population High 5-10 year olds, Rural, Lower- income (target) Among the 45 schools, students receiving free or reduced lunch rates ranged from 40-82%; student body ethnicity ranged from 0 - 72% Hispanic. (intervention population). Percentages not reported for individual schools that completed the survey.</p>	<p>Representative High All children in the Colorado schools were exposed.</p> <p>Potential Population Reach High Exposure = High Representativeness = High</p> <p>Potential High Risk Population Reach High High-risk population = High Representativeness = High</p>	<p>Intervention Components Complex Implementation of the federally mandated school wellness policy in rural, lower-income elementary schools in Colorado</p> <p>COMPLEX: 1. Technical assistance provided to school districts by several state level organizations to aid in compliance. 2. Implementation guide distributed and training offered to Colorado school personnel.</p> <p>Feasibility Intervention Feasibility = Low Policy Feasibility = High</p> <p>Intervention activities: Development of a local school wellness policy (nutrition and physical activity components), technical assistance provided to schools, implementation guide distributed to schools, training for school personnel</p> <p>Specialized expertise: State-level organizations to provide technical assistance and training</p> <p>Resources needed: Implementation guide and personnel for technical assistance Costs: Not reported</p> <p>Implementation Complexity High Intervention components = Complex Feasibility = High</p>	<p>Population Impact High Impact for Physical Activity in the Study Population Effectiveness = Effective for physical activity in the study population Potential population reach = High Implementation complexity = High</p> <p>High-risk Population Impact More Evidence Needed Effectiveness for high-risk population = More evidence needed Potential high-risk population reach = High Implementation complexity = High</p> <p>Sustainability Not Reported</p>	<p>Not Reported</p>	<ol style="list-style-type: none"> The number of principals requiring teachers to allow students to participate in physical education or recess despite bad classroom behavior, missed work or other activities did not increase after the local wellness policy went into effect. Local wellness policies had low “strength” scores in all dimensions and particularly in nutrition guidelines and physical activity, indicating that policies did not include strong wording such as “require” or “mandate.” Schools who developed a committee of individuals from within and outside the school tended to have stronger and more comprehensive policies than those that relied on one lead person to draft the policy.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
<p>Author Heard-Longley, Sneed (2009) United States</p>	<p>Participation/Potential Exposure Not Applicable</p> <p>High-Risk Population Not Applicable</p> <p>Only cross-sectional data provided</p>	<p>Representative Not Applicable</p> <p>Potential Population Reach Not Applicable</p> <p>Potential High Risk Popluation Reach Not Applicable</p>	<p>Intervention Components Not Applicable</p> <p>Only cross-sectional data provided</p> <p>School wellness policy development in school districts following the 2004 federal Reauthorization Act</p> <p>Feasibility Not Applicable</p> <p>Implementation Complexity Not Applicable</p>	<p>Population Impact Not Applicable</p> <p>High-risk Population Impact Not Applicable</p> <p>Sustainability Not Applicable</p>	<p>Not Reported</p>	<ol style="list-style-type: none"> In phase 1, thirty states scored zero and only three states: CA, TN, MS scored five or greater to meet the criteria for a state with a strong environment for wellness policy development in 2004. In 2006, 22 states scored 5 or greater to meet the criteria. Foodservice directors noted after the law's enactment the integration of nutrition into the curriculum increased from 56.5% of districts to 81.3% of districts, use of the foodservice department for nutrition education increased from 52.1% to 75.8%, nutrition education for all grades increased from 33.6% to 61.2%, requirements for professional standards for nutrition educators increased from 21.8% to 49%, and nutrition education offered to adults increased from 16% to 46.6%. Wellness teams were designated by 60.3% of school districts for implementing and by 63.4% of school districts for evaluating the progress of the wellness policy.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
International						
<p>Author Macaulay, Paradis (1997); Horn, Paradis (2001); Potvin, Cargo (2003); Jimenez, Receveur (2003); Paradis, Levesque (2005); McComber, Macaulay (1998) Canada</p>	<p>Participation/Potential Exposure Participation = Not Reported Exposure = High All children (grades 1-6) at the 2 intervention schools were exposed to the intervention. High-Risk Population High 6-12 year olds (target population) 100% Native American/American Indian (intervention)</p>	<p>Representative High All children at the intervention schools were exposed. Potential Population Reach High Exposure = High Representativeness = High Potential High Risk Population Reach High High-risk population = High Representativeness = High</p>	<p>Intervention Components Multi-component Kahnawake Schools Diabetes Prevention Project (KSDPP)- Extra physical education class each week (added at 1 school); school incentives for integrating extra physical activity into daily routine <u>MULTI-COMPONENT:</u> 1. School policies that require canteens to only offer healthy foods (low-fat, low-simple sugar, high-fiber foods) and students bring only healthy lunches and snacks to school. <u>COMPLEX:</u> 1. Health curriculum component: taught in grades 1-6 for ten 45-min lessons/year/grade 2. Community component: 63 activities for children, teachers, families, and the community both in and out of school; creation of on-going programs; support of existing community groups. 3. Promotion component: used media to increase awareness and community mobilization Feasibility Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, extra physical education class each week, health education, community programs, promotional activities Specialized expertise: Dietitian and community health nurses to create and teach the curriculum during the 1st year; training for teachers to deliver the curriculum during the following years Resources needed: Dieticians, nurses, staff to coordinate the field intervention, staff secretary, newspaper and radio ads, Community Advisory Board (ambassadors of “wellness”), healthier foods for school canteens, incentives, funds for community activities Costs: Not reported Implementation Complexity High Intervention components = Multi-component Feasibility = High</p>	<p>Population Impact No Impact for Overweight/obesity in the Study Population No Impact for Physical Activity in the Study Population Effectiveness = Not effective for overweight/obesity and physical activity in the study population Potential population reach = High Implementation complexity = High High-risk Population Impact No Impact for Overweight/obesity in Native American Children No Impact for Physical Activity in Native American Children Effectiveness for high-risk populations = Not effective for overweight/obesity and physical activity in Native American children Potential high-risk population reach = High Implementation complexity = High Sustainability Yes Kahnawake Schools Diabetes Prevention Project received funding to develop a Kahnawake-based research and training center for diabetes prevention, Phase IV of the project.</p>	<p>School Wellness Policies (Nutrition) <u>NUTRITION:</u> 1. No significant changes between intervention and comparison communities from 1994-1996 for consumption of sugar, fat, fruits and vegetables.</p>	<p>Not Reported</p>