IMPACT AND EFFECTIVENESS TABLE 39

School Physical Activity Policies

EFFECTIVENESS TABLES

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
School Physical Activity Policies - United States				
Author Sallis, McKenzie (2003); McKenzie, Sallis (2004); Murphy Zive, Pelletier (2002) San Diego County, California **Design** Intervention Evaluation Group randomized trial **Duration** High 2 years	**Measures** *Access to a healthy school environment* (physical activity time in class, increased PA equipment, accessibility) **Outcome(s) Affected** Physical activity (SOPLAY, SOFIT), overweight/ obesity (survey [height and weight]) nutrition (direct observation, menu analysis, survey)	**Net Positive for Overweight/obesity in Boys (School Physical Activity Policies)** **Neutral for Overweight/obesity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** <u>OVERWEIGHT/OBESITY:</u> 1. There was a significant reduction in body mass index (BMI) for intervention boys compared to control boys (F=4.60, p=0.044. effect size, d=0.83). 2. There was no significant BMI change for girls (F=0.09, p=0.771. effect size, d=-0.12). <u>PHYSICAL ACTIVITY:</u> 3. Physical activity increased at intervention schools at a greater rate than control schools (F=7.53, p<0.009, effect size, d=0.93). 4. The increase in physical activity in intervention boys compared to control boys was significant (F=12.16, p<0.001. effect size, d=1.10) while the increase among intervention girls was not (F=0.73, p=0.396. effect size, d=0.37). 5. Boys in intervention schools increased about equally in physical activity in physical education and out of physical education, but intervention girls increased their activity mainly through physical education. 6. The intervention resulted in significant overall increases in the time students spent in MVPA [F(1,46)= 5.43, p= 0.02; d= 0.88], approximately 3 min per lesson. 7. Intervention effects on MVPA were different for boys and girls. Effect sizes on MVPA were large for boys (d=0.98; F[1,22]=8.36, p=0.009) and moderate for girls (d=0.68; F[1,46]=3.20, p=0.08). By year 2, girls in intervention schools were engaging in MVPA at a level similar to the boys in control schools. 8. The intervention had a moderate effect (d=0.66) but non-significant trend [F(1,46)=2.99, p=0.09] for increasing the proportion of class time students engaged in MVPA. During year 2, students in the intervention schools were active about 52% of lesson time, compared with 48% for those in control schools.	**Effective for Overweight/ obesity in Boys** **Not Effective for Overweight/ obesity in Girls** **Effective for Physical Activity in the Study Population** **Effective for Physical Activit in Boys** **Effective for Physical Activity in Girls** Study design = Intervention Evaluation Effect size = Net positive for overweight/ obesity in boys and neutral for overweight/ obesity in girls. Net positive for physical activity in the study population, boys, and girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Caballero, Clay (2003); Himes, Ring (2003); Story, Snyder (2003); Cunningham-Sabo, Snyder (2003); Steckler, Ethelbah (2003); Going, Thompson (2003); Stevens, Story (2003); Helitzer, Davis (1999); Snyder, Anliker (1999); Teufel, Perry (1999); Davis, Going (1999); Gittelsohn, Evans (1999); Davis, Clay (2003); Davis, Hunsberger (1999); Stone, Norman (2003); Gittelsohn, Merkle (2003) New Mexico, Arizona, Minnesota, South Dakota **Design** Intervention Evaluation Group randomized trial **Duration** High 6 years 3 years intervention development; 3 years intervention implementation	**Measures** *Access to a healthy school environment* (timed physical activity sessions, exercise breaks during class, availability of healthy foods) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], bioelectrical impedence [percent body fat], skinfold measures), physical activity (accelerometers, questionnaires), nutrition (nutrient changes in the school menus, 24-hour recall, direct observation, questionnaire)	**Neutral for Overweight/obesity for Lower-income, Native American Students (School Physical Activity Policies)** **Neutral for Physical Activity for Lower-income, Native American Students (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no statistically significant differences between the intervention and control groups in any of the anthropometric variables at baseline or follow-up. 2. Percent body fat (%BF) increased by ~7% in both groups (mean difference in change in %BF between the intervention and controls was 0.2, 95% CI: -0.84 - 1.31). 3. From baseline to follow-up the percent of children with BMIs greater than the 85th percentile increased in intervention and control schools (6% and 8% increase, respectively). PHYSICAL ACTIVITY: 4. Motion sensor measurements indicated no significant difference over a 24 hour period between the intervention and control schools. 5. Based on accelerometry data, at follow-up children in intervention schools were more active (+6.3% to +27.2%) than children in control schools at 3 of the 4 study sites. None of the differences between intervention and control schools were significant. 6. Boys were significantly ($p \leq 0.01$) more active than girls by 17-21% at both baseline and follow-up. *Environment change results (menu changes) reported in the intervention table*	**Not Effective for Overweight/ obesity for Lower-income, Native American Students (Study Population)** **Not Effective for Physical Activity for Lower-income, Native American Students (Study Population)** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity and physical activity for lower-income Native American students (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author McKenzie, Sallis (1993); Sallis, McKenzie (1993); Sallis, McKenzie (1997); McKenzie, Sallis (1997); Sallis, McKenzie (1999); Marcoux, Sallis (1999); McKenzie, Sallis (2005); McKenzie, Sallis (2009) California **Design** Intervention Evaluation Group randomized trial **Duration** High Fall 1990 – Spring 1992	**Measures** *Access to a healthy school environment* (duration, intensity and complexity of physical activity during PE classes) **Outcome(s) Affected** Physical activity (accelerometers, mile run test, sit-ups, sit and reach, pull-ups) and overweight/obesity (height and weight, skinfold thickness)	**Neutral for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Neutral for Overweight/obesity in the Boys (School Physical Activity Policies)** **Neutral for Overweight/obesity in the Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. All boys (n=305) increased their body mass index (BMI) at follow-up. In the spring of 1991, the control boys had significantly lower adjusted BMI than those in the teacher-led condition ($p<0.05$). In the fall of 1991, the control boys were lower than both intervention conditions ($p<0.05$). However, by spring of 1992 all conditions had similar BMI scores. 2. For girls (n= 244), the control condition had the lowest adjusted BMI at each measurement point. The only significant difference was in the spring of 1992 where the control girls had significantly lower BMIs than girls in both of the other conditions ($p<0.01$). 3. No significant differences in skinfold thickness measures were observed for boys or girls in any condition. PHYSICAL ACTIVITY: 4. Girls in the specialist-led condition improved substantially in the mile run. The mean difference between specialist and control conditions of one minute at post-test reflected a moderate effect size of 0.32. There was no significant intervention effect for boys. 5. Specialist-led girls improved better than those in the control for the sit-up test. The mean difference of about 11 sit-ups in one minute at post-test produced a moderate effect size of 0.31. Although there was not a significant difference for boys at post-test, the difference between the specialist-led and control groups were significant at spring of fourth grade ($p<0.002$) and fall of fifth grade ($p< 0.001$). 6. There were no significant intervention effects on sit-and-reach, pull-ups or weekday or weekend recalls of physical activity. 7. There were no significant group differences on any accelerometer measure.	**Not Effective for Overweight/obesity in the Study Population** **Not Effective for Overweight/obesity in Girls** **Not Effective for Overweight/obesity in Boys** **Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Boys** **Effective for Physical Activity in Girls** Study design = Intervention evaluation Effect size = Neutral for overweight/obesity in the study population, boys, and girls and net positive for physical activity in the study population, boys, and girls	**Maintenance** 1. After PE specialists were withdrawn, there were significant reductions in both the frequency of lessons (2.9 vs. 1.6 per week) and total minutes of PE per week (81.9 vs. 38.1 min) in schools that were originally led by specialists, $p=0.001$. 2. Weekly moderate-to-vigorous physical activity (43.1 vs. 17.5 min) and very active minutes (18.3 vs. 7.0 min) were also lower at follow-up in schools where the PE specialists were withdrawn, resulting in children spending less than half as much energy (7.5 vs. 3.3 kcal/kg) during physical education, $p<0.001$. **Sampling / Representativeness** High The racial/ethnic breakdown of the evaluation sample was the same as all students from the participating schools, and similar to that of the community.
Author Pate, Ward (2005) & Ward, Saunders (2006) South Carolina **Design** Intervention Evaluation Group randomized trial and cross-sectional study (3 year follow-up) **Duration** Medium One school year	**Measures** *Access to a healthy school environment* (time spent in physical activity, use of outdoor space, use of community physical activity opportunities) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and moderate to vigorous and vigorous physical activity (3-day physical activity recall)	**Neutral for Overweight/obesity in Girls (Study Population) (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (Study Population) (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. The percentage of girls who were classified as at risk for overweight (~34%) or overweight (~17%) did not differ between intervention and the control schools at follow-up. PHYSICAL ACTIVITY: 2. At follow-up, after adjustment for baseline value and other covariates, the percentage of girls who reported regular vigorous physical activity (VPA) during an average of 1 or more 30-minute time blocks per day over the 3-day recall period was approximately 8% greater in the intervention schools than in the control schools (adjusted mean [standard deviation]= 44.5%[2.6] vs. 36.4%[2.9]; $p=0.05$). 3. Most girls in both groups reported a daily average of at least two 30 minute blocks of moderate-to-vigorous physical activity at both baseline and follow-up, and the prevalence of meeting that standard was not altered by the intervention.	**Not Effective for Overweight/obesity in Girls (Study Population)** **Effective for Physical activity in Girls (Study Population)** Study design = Intervention evaluation Effect size = Neutral for overweight/obesity in girls, and net positive for physical activity in girls	**Maintenance** Not Reported **Sampling / Representativeness** High The racial/ethnic breakdown of the evaluation sample was the same as all students from the participating schools (47.5% African American, 52.5% White)

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Neumark-Sztainer, Story (2003) Minnesota **Design** Intervention Evaluation Group randomized trial **Duration** Low 16 weeks	**Measures** *Access to a healthy school environment* (number of PE sessions offered each week, participation in community events and nutrition classes) **Outcome(s) Affected** Physical activity (parent and student surveys, interviews), nutrition and overweight/obesity (height and weight [body mass index])	**Neutral for Overweight/obesity in the Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no differences in BMI between intervention and control girls at either post-intervention (16 weeks) or the 8 month follow-up. PHYSICAL ACTIVITY: 2. There were differences between the intervention and control groups in progression of stage of change for physical activity. At post-intervention in the control schools, 20% of the 106 girls progressed in their stage of physical activity, and 24% regressed in their stage of physical activity. In the intervention schools, 31% of the 84 girls progressed, and 19% of the girls regressed [mean increases in stage (x100) were -1.26 in control and +5.16 in the intervention schools p=0.120]. 3. At the 8 month follow-up, the corresponding percentage changes in stage were effectively unchanged in the control schools, but enhanced in the intervention schools, where 38% of the 81 girls progressed while only 11% regressed in stage [mean increases in stage (x100) were -1.33 control and +11.11 intervention; p=0.004].	**Not Effective for Overweight/obesity in Girls** **Somewhat Effective for Physical Activity in Girls** Study design = Intervention evaluation Effect size = Neutral for overweight/obesity in girls, net positive for physical activity in girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Bayne-Smith, Fardy (2004) New York **Design** Intervention Evaluation Group randomized trial **Duration** Low 12 weeks	**Measures** *Access to a healthy school environment* (time spent in physical education classes, wellness education) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], skinfold thickness)	**Net Positive for Overweight/obesity for the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Mean changes in PATH versus control physiological measures were significant for % body fat (PATH: -1.2%; control: -0.4%; p<0.001), systolic blood pressure (PATH: -5.3; control: -3.0; p<0.05), and diastolic blood pressure (PATH: -3.2; control: +0.2; p<0.001). 2. Mean differences in BMI, total serum cholesterol, and estimated maximum oxygen uptake were not significant between PATH and control students.	**Somewhat Effective for Overweight/obesity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/obesity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Hopper, Munoz (2005) California **Design** Intervention Evaluation Group randomized trial **Duration** Low 20 weeks	**Measures** *Access to a healthy school environment* (time spent in physical education classes, wellness education) **Outcome(s) Affected** Physical activity (one mile run test) and nutrition (24 hour dietary recall)	**Neutral for Physical Activity for the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. There were no significant differences for any fitness measures between intervention and control schools at pre- or post-intervention.	**Not Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Neutral for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Donnelly, Greene (2009); Gibson, Smith (2008); DuBose, Mayo (2008); Honas, Washburn (2008) Kansas **Design** Intervention Evaluation Group randomized trial **Duration** High 3 years	**Measures** *Access to a healthy school environment* (physical activity lessons during core curriculum classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and physical activity (interview, questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no significant differences for change in BMI or BMI percentile (baseline to year 3) for PAAC vs. control (p=0.83), and this finding was not influenced by gender. 2. Schools (n=9) with ≥ 75 min of PAAC/week showed significantly less increase in BMI at 3 years (1.8 ± 1.8) compared to schools (n=5) that had <75 minutes of PAAC/week. (2.4 ± 2.0), p=0.02. 3. In children at risk for obesity at baseline, 21.8% moved to normal BMI in the PAAC group compared to 16.8% in the control group, while 22.6% in the PAAC group moved to overweight status compared to 31.1% in the control group (changes not significant). 4. Of those who were overweight at baseline, 17.1% of the PAAC group compared to 8.3% of the control group moved to at risk for overweight at follow-up (p=0.08). PHYSICAL ACTIVITY: 5. Accelerometry data (n= 77 PAAC, n= 90 control) showed on average over the 3-year intervention, children in PAAC schools had 13% greater PA compared to children in control schools, p=0.007. 6. Children in PAAC schools had greater levels of PA during the school day (12%>, p=0.01), on weekends (17%>, p=0.001), and on weekdays (8%>, p=0.05) compared to children in control schools. 7. Children in PAAC schools also exhibited 27% greater levels of moderate to vigorous intensity PA compared to children in control schools (p=0.001). 8. Teachers in the intervention schools who were more physically active during lessons had students who were more physically active (p<0.001). *1 yr outcome of SOFIT observations:* 9. Students in the intervention schools (n= 3465) performed significantly greater levels of physical activity in the classroom than students in the control schools (n=1050); higher scores indicate higher activity intensity levels (intervention students 3.40 ± 0.02 vs control students 2.17 ± 0.03, p<0.0001).	**Effective for Overweight/ obesity in the Study Population** **Effective for Physical Activity for the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity and physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Mahar, Murphy (2006) North Carolina **Design** Intervention Evaluation Group randomized trial **Duration** Low 12 weeks	**Measures** *Access to a healthy school environment* (physical activity lessons during core curriculum classes) **Outcome(s) Affected** Walking (pedometers)	**Net Positive for Physical Activity for Study Population (School Physical Activity Policies)** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. The intervention classes averaged approximately 782 more daily in-school steps than the control classes ($p<0.05$); the size of the mean difference was moderate (effect size= 0.49).	**Somewhat Effective for Physical Activity for Study Population** Study design = Intervention evaluation Effect size = Net positive for physical activity for the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author McMurray, Harrell (2002) North Carolina **Design** Intervention Evaluation Group randomized trial **Duration** Low 8 weeks	**Measures** *Access to a healthy school environment* (increasing physical activity during PE classes, wellness program awareness) **Outcome(s) Affected** Overweight/obesity (body mass index, skinfold thickness), aerobic power, and blood pressure (blood pressure measurement)	**Net Positive for Overweight/obesity for Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no differences in the change in BMI among the four groups from baseline to follow-up (education only group mean=0.26 kg/m^2 ± 0.06, exercise only group mean = 0.21 kg/m^2 ± 0.05, exercise and education group mean =0.23 kg/m^2 ± 0.06, control mean = 0.23 kg/m^2 ± 0.06; ANCOVA, p=0.709). 2. There was a significant difference in the change in sum of skinfolds among the four groups (education only group mean=1.9 ± 0.4, exercise only group mean=1.4 ±0.3, exercise and education group mean= 0.9 ± 0.3, control mean =3.7 ± 0.4; ANCOVA, p=0.0001). The increase in sum of skinfolds was less in the exercise and education group than the education only or control groups (p=0.0001).	**Somewhat Effective for Overweight/ obesity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** High Authors reported that the demographics of the sample were similar to the overall populations of the schools. 64% White, 24.4% African-American, 11.6% other ethnicities (evaluation sample)

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Luepker, Perry (1996); Luepker, Perry (1998); McKenzie, Nader (1996); McKenzie, Stone (2001); Webber, Osganian (1996); Dwyer, Hewes (1996); Osganian, Ebzery (1996); Lytle, Stone (1996); Perry, Lytle (1998); Nader, Sellers (1996); Perry, Sellers (1997); Nicklas, Dwyer (1996); Nicklas, Stone (1994); Nader, Stone (1999); Hoelscher, Feldman (2004); Osganian, Hoelscher (2003) California, Louisiana, Texas, and Minnesota **Design** Intervention Evaluation Group randomized delayed intervention **Duration** High CATCH intervention was implemented over 3 school years (1991-1994), with 3 year follow-up (1995-1997) and 5 year follow-up (CATCH-ON 1998-2000)	**Measures** *Access to a healthy school environment* (increasing physical activity during PE classes, dietary consumption) **Outcome(s) Affected** Physical activity (direct observation [SOFIT], self-administered Physical Activity Checklist [SAPAC]), overweight/ obesity (height and weight, skinfold thickness) and nutrition (24-hour food recall, 45- min Health Behavior Questionnaire)	**Neutral for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Measures of body size (height, weight, BMI, skinfolds) did not differ between the intervention and control groups at baseline or follow-up. PHYSICAL ACTIVITY: 2. Children in intervention schools engaged in more moderate to vigorous physical activity (MVPA) during lessons than those in control schools (51.9% vs. 42.3% of lesson time, p=0.002). 3. Children in intervention schools engaged in more VPA minutes (58.6 vs 46.5; p=0.003) and MET-weighted vigorous minutes (339.5 vs. 270.3; p<0.003) per day than control schools. 4. Children in intervention schools ran 18.6 yards more in the 9 min run test than control schools, not statistically significant. 5. Compared to controls, children in intervention schools had a higher estimated energy expenditure (2.49 kcal/kg vs. 2.26 kcal/kg; p=0.002) and a higher energy expenditure rate (0.0085 kcal/kg/min vs. 0.0078 kcal/kg/min; p=0.002) per lesson	**Not Effective for Overweight/ obesity in the Study Population** **Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Intervention duration = High Effect size = Neutral for overweight/ obesity in the study population and net positive for physical activity in the study population	**Maintenance** 3 YEAR FOLLOW-UP 1. No significant differences were noted among physiologic indicators of BMI, blood pressure, or serum lipid and cholesterol levels. 2. The intervention effect for minutes of self-reported daily vigorous activity was maintained at grade 8 (30.2 min. intervention & 22.1 min. control, p=0.001). 5 YEAR FOLLOW-UP 3. For grade 3 (1991-1999), %VPA decreased in intervention schools (from 21.3% to 17.1% of lesson, p =0.0004) but increased slightly in former control schools (from 14.5% to 16.2% of lesson, p =0.335), adjusted mean difference -5.8%, p =0.003. %MVPA increased in both intervention (from 46.4% to 51.6% of lesson, p =0.003) and former control schools (from 34.5% to 48.4% of lesson, p=0.0001), adjusted mean difference -8.6%, p =0.004. 4. CEE (relative energy expenditure during the lesson) remained the same in intervention schools but increased in former control schools (adjusted mean difference= -0.16 Kcal/kg, p =0.01). 5. For grade 4 (1993-1999), %VPA decreased significantly in intervention schools (from 22.5% to 15.0% of lesson, p =0.0001) and in former control schools (from 16.4% to 15.0% of lesson, p =0.424), adjusted mean difference -6.2%, p =0.003. %MVPA also decreased in intervention schools (from 51.4% to 49.4% of lesson, p =0.254) but increased in former control schools (41.7% to 48.8% of lesson, p =0.007), adjusted mean difference -9.2%, p = 0.031. 6. CEE decreased in intervention schools and increased in former control schools (adjusted mean difference= -0.20, p=0.001). 7. For grade 5 (1994-1999), %VPA decreased in both intervention (from 20.1% to 14.5% of lesson, p=0.0001) and former control schools (from 17.1% to 13.6% of lesson, p=0.094), adjusted mean difference not significant. %MVPA increased in both intervention (from 50.9% to 52.8% of lesson, p=0.364) and former control schools (44.0% to 49.8% of lesson, p=0.069), adjusted mean difference not significant. **Sampling / Representativeness** High There were no differences by site, gender or ethnic group between those who participated in the evaluation and those that did not.

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Heath, Coleman (2002); Heath, Coleman (2003); Coleman, Tiller (2005); Brown, Perez (2007) Texas and New Mexico **Design** Intervention Evaluation Group randomized trial **Duration** High 3 years	**Measures** *Access to a healthy school environment* (increasing physical activity during PE classes, dietary consumption) **Outcome(s) Affected** Moderate and moderate to vigorous physical activity (direct observation) and overweight/ obesity (height and weight)	**Net Positive for Overweight/obesity in Lower-income Hispanic Children (School Physical Activity Policies)** **Net Positive for Physical Activity in Lower-income Hispanic Children (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: *Cohort 5 (1999-2000 w/ controls) only:* 1. Girls in control schools had higher increases in percentage of risk of overweight or overweight from 3rd to 5th grade compared with intervention schools (rate of increase 13% vs. 2%, respectively). Boys in control schools had higher increases in percentage of risk of overweight or overweight from 3rd to 5th grade compared with intervention schools (rate of increase 9% vs. 1%, respectively). 2. The % of overweight in girls did not change in control or intervention schools, but the % of overweight in boys significantly increased in both control and intervention boys (8% in control and 5% in intervention). 3. There was no effect of intervention on height, weight, waist-to-hip ratio, or BMI for any children. PHYSICAL ACTIVITY: 4. Cohort 1 (1998-2000) had significant increases in class time spent in MVPA (40.8% baseline to 59.2% end of year 1; $\chi 2 = 379.5$, $p<0.001$) and VPA (8.2% baseline to 12.7% end of year 1; $\chi 2 = 103.7$, $p<0.001$) at the end of year 1, with declining increases by the end of the 2nd year (though still statistically significant from baseline). MVPA goals were met at the end of year 1, but not by the end of year 2. 5. Cohort 2 (1999-2000) had significant increases in class time spent in MVPA (36.5% baseline to 38.9% end of year 1; $\chi 2 = 4.5$, $p<0.05$) but significant decrease in VPA (9.9% baseline to 7.2% end of year 1; $\chi 2 = 19.98$, $p<0.001$) at the end of year 1. Levels of MVPA and VPA never met CATCH goals. 6. Cohort 3 (1997-2000) met CATCH goals for MVPA (50% class time) after 2 years in the program (53.0% class time). 7. Cohort 4 did not meet CATCH goals for MVPA after 3 years in program (41.1% class time). 8. Cohort 5 (1999-2000 w/ controls) had significant increases in class time spent in MVPA (30.3% baseline to 51.5% end of year 1; $\chi 2 = 266.0$, $p<0.001$) and VPA (9.0% baseline to 16.0% end of year 1; $\chi 2 = 98.3$, $p<0.001$) at the end of year 1, with no increase in MVPA in control schools, but a significant increase in VPA in control schools (10.8% baseline to 13.3% end of year 1; $\chi 2 = 9.22$, $p<0.01$). Intervention schools were meeting CATCH MVPA goals by the end of year 1. No intervention school reached VPA goals. 9. For cohort 5 (1999-2000 w/ controls), the children's mean change in yards run from 3rd to 5th grade in the 9 minute run test was higher in the intervention schools compared to control schools (control boys: 111 yards, 95% CI: 77-144 vs. intervention boys 126 yards 95% CI: 92-160; control girls: 92 yards, 95% CI: 64-120 vs. intervention girls: 101 yards, 95% CI: 66-136). (Note: Environment change results (changes in breakfast and lunch menus) reported in the intervention table.)	**Effective for Overweight/obesity in Lower-income Hispanic Children (Study Population)** **Effective for Physical Activity in Lower-income Hispanic Children (Study Population)** Study design = Intervention evaluation Effect size = Net positive for overweight/obesity and physical activity in Lower-income Hispanic children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Harris, Paine-Andrews (1997); Harris, Richter (1997) Kansas **Design** Intervention Evaluation Non-randomized trial **Duration** High 2 years	**Measures** *Access to a healthy school environment* (time spent in in-school physical activity, dietary consumption) **Outcome(s) Affected** Physical activity (Amateur Athletic Union physical fitness assessment) and School environment changes (menu, physical education curriculum)	**Net Positive for Physical Activity for Study Population** **Net Positive for Physical Activity for Girls** **Net Positive for Physical Activity for Boys** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. Fitness levels of the intervention students increased from pretest to posttest and in Salina, intervention students were more fit than similar students who did not participate in the project. 2. The percentage of intervention Dighton students performing at or above the AAU Fitness Attainment Level increased from pretest (18%) to posttest (29%), p=0.29. 3. In Salina, girls in the intervention group reduced their average 1 mile run time by 1.21 minutes while girls in the comparison group reduced their average time by only 0.32 minutes (t[48]=2.60, p=0.012). 4. Salina intervention boys reduced time by 1.76 minutes compared to 0.64 minute reduction for those in the comparison group (t[59]=2.19, p=0.033). ENVIRONMENT CHANGE: 5. Post intervention, the mean percent calories from fat in school lunches was reduced from 40% at Dighton and 38% at Salina to target levels (~30% at both schools) while maintaining or increasing total calories. 6. The community partnerships in Dighton created over 179 community changes over a 27-month period. 7. The community partnerships in Salina created over 72 community changes over a 27-month period.	**Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Girls** **Effective for Physical Activity in Boys** Study design = Intervention evaluation Effect size =Net positive for physical activity in the study population, girls, and boys	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Cotts, Goldberg (2008); Cotts, Durussel-Weston (2007) Michigan **Design** Intervention Evaluation Before and after study **Duration** Medium Sept. 2005 – May 2006	**Measures** *Access to a healthy school environment* (time spent in in-school physical activity, dietary consumption) **Outcome(s) Affected** Overweight/ obesity (height and weight [BMI]) high and low intensity aerobic activity, nutrition (survey), and physiological factors (blood pressure, glucose, cholesterol)	**Neutral for Overweight/obesity for Study Popoulation (School Physical Activity Policies)** **Net Positive for Physical Activity for Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Mean BMI z-score at the beginning of the study was 0.4 +/- 1.0. No significant change in BMI occurred over the course of the study period. The difference in the BMI scores between baseline and 5 months was 0.01 (p=0.59). PHYSICAL ACTIVITY: 2. No significant increase in the frequency of high-intensity aerobic activity or strength training was reported between baseline and follow-up. Lower-intensity aerobic activity increased in frequency (p=0.002). (Note: Positive outcomes for nutrition are only related to fruit and vegetable intake and physical activity are only related to lower-intensity aerobic activity.)	**Not Effective for Overweight/ obesity in the Study Population** **Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Neutral for obesity in the study population and net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Young, Phillips (2006) Maryland **Design** Intervention evaluation Before and after study **Duration** Medium 8 months	**Measures** *Access to a healthy school environment* (time spent in physical activity during PE classes, health and wellness knowledge) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], waist circumference) and physical activity (7-day physical activity recall, direct observation, questionnaire)	**Net Positive for Overweight/obesity for Girls (School Physical Activity Policies)** **Net Positive for Physical Activity for Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Mean body mass index, waist-hip ratio and waist circumference did not differ from baseline to follow-up by treatment status. 2. There were significant improvements from baseline to follow-up in waist-hip ratio for both groups (intervention mean Δ= -0.02; p=0.001 and control mean Δ= -0.01; p=0.05). PHYSICAL ACTIVITY: 3. Intervention physical education classes spent significantly more time (46.9%) walking or active than control physical education classes (30.5%, p< 0.001). 4. There was no significant difference between the intervention and control group for mean daily energy expenditure (p=0.93), moderate-intensity energy expenditure (p=0.77), or hard to very hard energy expenditure (p=0.69). 5. There were significant improvements from baseline to follow-up in submaximal heart rate for the intervention (-7.1; p< 0.001) and control group (-7.4; p< 0.001). 6. The proportion of students who spent 3 or more hours viewing television during school days declined 5.3% from baseline to follow-up in the intervention group, with no change in the controls (p=0.03).	**Effective for Overweight/ obesity for Girls** **Effective for Physical Activity for Girls** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity and physical activity in girls	**Maintenance** Not Reported **Sampling / Representativeness** High The demographics of the evaluation sample were consistent with the demographics of the school (83% African American).
Author Shaw-Perry, Horner (2007) Texas **Design** Intervention evaluation Before and after study **Duration** Low 7 weeks	**Measures** *Access to a healthy school environment* (time spent in PE classes, health and wellness knowledge) **Outcome(s) Affected** Overweight/obesity (height and weight [BMI], bioelectrical impedence analysis) and fitness tests (20 meter shuttle run test)	**Net Positive for Overweight/obesity in Lower-Income, African-American Children (School Physical Activity Policies)** **Net Positive for Physical Activity in Lower-Income, African-American Children (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Percent body fat and body mass index (BMI) moved in opposite directions. From baseline to follow-up, % body fat decreased from 27.26 ± 12.89% to 26.68 ± 11.67% (paired sample t=0.62, df=57, p=0.518) and BMI increased from 20.30 ± 5.29 kg/m^2 to 20.81 ± 5.57 kg/m^2 (t[57]=-3.06, p<0.003). PHYSICAL ACTIVITY: 2. The laps completed in the 20-meter shuttle run test increased from 16.4 ± 9.98 at baseline to 23.72 ± 14.79 at follow-up (t(57)= -4.96, p<0.001).	**Somewhat Effective for Overweight/ obesity in Lower-Income, African-American Children (Study Population)** **Somewhat Effective for Physical Activity in Lower-Income, African-American Children (Study Population)** Study design = Intervention evaluation Effect size = Net positive for overweight/obesity for lower-income, African American children, net positive for physical activity for lower-income, African American children, net positive for reduction in negative physiological response for lower-income, African American children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Stevens, Murray (2005); Young, Johnson (2006); Gittlesohn, Steckler (2006); Webber, Catellier (2008); Elder, Shuler (2008) United States **Design** Intervention evaluation Before and after study **Duration** High 3 years	**Measures** *Access to a healthy school environment* (time spent moderate to vigorous physical activity (MVPA) in PE classes, participation in corresponding wellness activities) **Outcome(s) Affected** Overweight/obesity (body mass index, percent body fat, triceps skinfold thickness) and moderate to vigorous physical activity (accelerometers, direct observation)	**Neutral for Overweight/obesity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no differences in body mass index, percent body fat, or triceps skinfold thickness at either 8th grade time-point. PHYSICAL ACTIVITY: *Spring 2005* 2. After the staff-directed intervention (the first 2 years), there were no differences (mean=-0.4, 95% CI=-8.2 to7.4) in adjusted metabolic equivalent (MET)-weighted moderate-to-vigorous physical activity (MVPA) between 8th grade girls in schools assigned to intervention or control. 3. The average daily minutes of MET-weighted minutes of MVPA declined from 146 (+/-81.8) in 6th-grade girls to 136 (+/-74.3) in 8th-grade girls in 2005. *Spring 2006* 4. Following the Program Champion-directed intervention, girls in intervention schools were more physically active than girls in control schools (mean difference 10.9 MET-weighted minutes of MVPA, 95% CI=0.52-21.2, p=0.03). 5. The decrease in MET-weighted minutes of MVPA in intervention schools from 6th grade to 8th grade in 2006 was only 6%, or less than half that observed in the control schools. 6. Girls in intervention schools had 13.5 (95% CI=0.3 to 26.7) additional MET-weighted minutes of weekday MVPA and 1.6 (95% CI=-5.9 to 9.1) additional MET-weighted minutes of weekend MVPA than did girls in control schools. For weekday MVPA, about half of the difference, 7.3 MET-weighted minutes (95% CI=3.1 to 11.5) was reflected during the afternoon period (2:00 – 5:00 PM) 7. The percentage of PE time devoted to MVPA during class was 4% greater in intervention schools at both 8th grade periods, and was significant (p=0.025). 8. A significant difference between intervention and control schools was noted for minutes of MVPA (p<0.05), but not for minutes of total PA. 9. The girls in the control schools had 8.2 more minutes of daily sedentary activities (p≤0.05) than girls in the intervention schools. (Note: Environment change results reported in the intervention table.)	**Not Effective for Overweight/ obesity in Girls** **Effective for Physical Activity in Girls** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity in girls and net positive for physical activity in girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Pangrazi, Beighle (2003) Arizona **Design** Intervention evaluation Group randomized trial (analysis post-intervention only) **Duration** Low 12 weeks	**Measures** *Access to a healthy school environment* (time spent in physical activity during the school day) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and physical activity (pedometers)	**Neutral for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. No significant differences in BMI by group were found. PHYSICAL ACTIVITY: 2. Results showed boys had higher mean step counts than girls (13,287 vs. 12,222 for PLAY &PE; 13,758 vs. 11,429 for PLAY only; 12,951 vs. 11,899 for PE only; and 13,050 vs. 9,945 for No Treatment) 3. Students participating in PLAY (PLAY & PE, PLAY Only) accumulated more steps and recorded lower BMI values (PLAY & PE: steps (mean)=12,763, BMI (mean)=18.89; PLAY Only steps (mean)=12,598, BMI (mean)=18.76; PE Only steps (mean)=12,401, BMI (mean)=19.35; No Treatment steps (mean)=11,180, BMI (mean)=19.92). 4. One-way analysis of variance (ANOVA) showed a significant difference between groups for steps and BMI [F (2, 605) =3.552, p=0.014]. 5. Tukey post hoc tests revealed significant differences in step counts between the PLAY & PE and No Treatment group (mean difference= 1,583 steps, p<0.01) and the PLAY only and No Treatment group (mean difference = 1,418 steps, p<0.05). 6. When groups were analyzed by gender, one-way ANOVAs showed significant differences for girls [F(3,314)= 5.36, p<0.001]. Tukey post hoc tests indicated significant differences in girls' step counts between the PLAY & PE and No Treatment groups (mean difference = 2,277 steps, p<0.001) and the PE only and No Treatment groups (mean difference = 1,954 steps, p<0.01).	**Not Effective for Overweight/ obesity in the Study Population** **Somewhat Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity in the study population and net positive for physical activity in study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Kelder, Springer (2009) Texas **Design** Intervention evaluation Prospective cohort **Duration** High Ongoing state policy	**Measures** *Access to a healthy school environment* (increase minimum time spent in physical activity during the school day, dietary consumption) **Outcome(s) Affected** Overweight/obesity [body mass index (BMI)] and moderate to vigorous physical activity (interviews, 5-day physical activity log, System for Observing Fitness Instruction Time [SOFIT], School Physical Activity and Nutrition Questionnaire)	**Net Negative for Overweight/obesity in Lower-income, Hispanic Children (School Physical Activity Policies)** **Neutral for Physical Activity in Lower-income, Hispanic Children (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. In schools from Region 10, the prevalence of obesity increased from 16.1% to 21.3% between 2004 and 2007 (p=0.04). Although no significant changes in BMI were observed for Region 11, the high prevalence of obesity (~30%) was maintained. PHYSICAL ACTIVITY: 2. At every grade level, students in Region 10 met the Healthy People 2010 benchmark of 50% of available physical education class time devoted to moderate-to-vigorous physical activity. 3. Students in Region 11 scored considerably lower in moderate and vigorous PA among 3rd grade students (p=0.033) and overall (p=0.029), 19.75% and 9.4%, respectively. (Note: All obesity and physical activity results are from a subsample of students from regions 10 and 11.)	**Not Effective for Overweight/ obesity in Lower-income, Hispanic Children (Study Population)** **Not Effective for Physical Activity in Lower-income, Hispanic Children (Study Population)** Study design = Intervention evaluation Effect size = Net negative for overweight/ obesity in lower-income, Hispanic chidren and neutral for physical activity lower-income, Hispanic children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Datar, Sturm (2004) United States **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Overweight/obesity (Early Childhood Longitudinal Study - Kindergarten Class [ECLS-K] height and weight data [body mass index]) and physical activity (minutes in physical education classes)	**Positive Association for Overweight/obesity in Girls (School Physical Activity Policies)** **Positive Association for Physical Activity in the Study Population (School Physical Activity Policies)** **(Assumptions: Increased time in physical education class will lead to decreased BMI and increased rates of physical activity.)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. One additional hour of physical education in first grade compared with the time allowed for physical education in kindergarten reduces BMI among girls who were overweight or at risk for overweight in kindergarten (BMI change coefficient = –0.317, 95%CI: -0.459, -0.174, p<0.001). 2. One additional hour of physical education in first grade compared with the time allowed for physical education in kindergarten has no significant effect on BMI among overweight or at-risk for- overweight boys (BMI change coefficient = -0.068, p=0.25) or among boys (BMI change coefficient=0.04, p=0.31) or girls (BMI change coefficient=0.01, p=0.80) with a normal BMI. 3. Although not quite statistically significant, it was estimated that White girls who were overweight or at risk for overweight may benefit more from an increase in physical education instruction time compared with other overweight or at risk for overweight girls (estimated BMI Δ= -0.22, p=0.05). PHYSICAL ACTIVITY: 4. There was a significant increase in the average minutes per week of physical education between kindergarten and 1st grade (difference=8.2 min/week; p<0.001). The median increase was much larger, from 34.5 min/week in kindergarten to 68.2 min/week in 1st grade. 5. Overall, 37% of the children experienced an increase in physical education instruction time between kindergarten and first grade and 44% maintained their kindergarten level of physical education. About 8% went from no physical education in kindergarten to some physical education during the week in first grade. 19% of children saw a reduction in minutes per week of physical education, with only 2% of those who had physical education in kindergarten not receiving physical education in first grade.	**Positive Association for Overweight/ obesity in Girls** **Positive Association for Physical Activity in Study Population** Study design = Association Effect size = Positive Association for overweight/ obesity and physical activity in the study population	**Maintenance** Not Applicable **Sampling / Representativeness** High The ECLS-K study uses a nationally representative sample.

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Cawley, Meyerhoefer (2007) United States **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Physical activity and overweight (Youth Risk Behavior Surveillance System data, height and weight [body mass index])	**No Association for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Positive Association for Physical Activity in the Study Population (School Physical Activity Policies)** **Positive Association for Physical Activity in the Girls (School Physical Activity Policies)** **Positive Association for Physical Activity in the Boys (School Physical Activity Policies)** **(Assumption: State requirements for physical education (PE) increase the time students spend active in PE, which lowers body mass index [BMI] and overweight/obesity)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Using logit models there was no evidence that active PE time lowers BMI or reduces the risk of overweight. PHYSICAL ACTIVITY: 2. Students bound by PE requirements reported more time spent physically active in PE class: an additional 26.9 minutes per week for boys and 37 minutes per week for girls, F statistic for the instrument = 24.30 for boys and girls pooled, 14.26 for boys and 33.46 for girls. Each exceeds the generally accepted minimum F of 10 for instruments in IV estimation (Stock et al., 2002). 3. Based on the IV model, 100 extra minutes of active PE time raised the number of days with vigorous exercise reported by girls by 1.017 ($p<0.01$). In other words, for girls to spend an additional day with at least 20 min. of vigorous exercise requires an extra 98 min. of active PE time/week, or 20 more minutes per school day. 4. Based on the IV model, 100 extra minutes spent active in PE class raises the number of days in which girls engaged in strength-building activities by 0.83 ($p<0.05$). In other words, for girls to spend an additional day engaged in strength-building activity requires an extra 120 min. of active PE time/week, or 24 more minutes per school day. 5. For boys, there was no impact of active PE time on any of the measures of physical activity.	**No Association for Overweight/obesity in the Study Population** **Positive Association for Physical Activity in the Study Population** **Positive Association for Physical Activity in the Girls** **Positive Association for Physical Activity in the Boys** Study design = Association Effect size = No association for overweight/obesity in the study population, positive associations for physical activity in the study population, girls, and boys	**Maintenance** Not Applicable Only cross-sectional data provided **Sampling / Representativeness** High The Youth Risk Behavior Surveillance System is a nationally representative sample of high school students in the United States.
Author Scruggs, Beveridge (2003) Location not reported **Design** Descriptive Non-comparative study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (time spent in physical activity during school, availablity of playground equipment) **Outcome(s) Affected** Physical activity (heart-rate monitors, pedometers)	**Positive Association for Physical Activity for Study Population (School Physical Activity Policies)** **(Assumption: Students will engage in more physical activity during structured fitness breaks.)** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. Students had a significantly higher % of break time spent in the moderate to vigorous heart rate zone ($F[2,50]=90.41$, $p=0.0001$), % or break time spent in the vigorous heart rate zone ($F[2,24]=41.19$, $p=0.0001$]) and steps/minute ($F[2,24]=43.02$, $p=0.0001$) values during structured fitness break sessions compared to morning recess and lunch recess sessions. 2. Boys had significantly higher steps/minute values than girls during morning recess (mean= 66.76 vs. 36.68, $p=0.001$), lunch recess (mean= 72.45 vs. 48.43, $p=0.003$), and fitness break sessions (mean= 127.27 vs. 93.18, $p=0.016$). Only during fitness break sessions did boys have a significantly higher % of break time spent in the vigorous heart rate zone than girls (mean= 64.30 vs. 31.53, $p=0.011$).	**Positive Association for Physical Activity for Study Population** Study design = Descriptive Effect size =Positive association for physical activity for study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
School Physical Activity Policies - International				
Author Haerens, Deforche (2006); Haerens, De Bourdeauduij (2007); Haerens, De Bourdeauduij (2006); Haerens, Cerin (2007); Haerens, Cerin (2007); Haerens, Deforche (2006) Belgium **Design** Intervention Evaluation Group randomized trial **Duration** High 2 school years	**Measures** *Access to a healthy school environment* (time spent in MVPA during physical education classes, dietary consumption) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]), physical activity (accelerometers, Flemish physical activity questionnaire), and nutrition (food frequency questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Girls (School Physical Activity Policies)** **Neutral for Overweight/obesity in Boys (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity Policies)** **School Physical Activity Policies** <u>OVERWEIGHT/OBESITY:</u> *After Two Years* 1. For girls there was a significantly lower increase in BMI in the intervention with parent group (from 20.23 ± 3.95 to 21.34 ± 3.83), compared to control (from 19.12 ± 3.50 to 20.78 ± 3.66, F=12.52; p<0.05). 2. For girls there was a significantly lower increase in BMI z score in the intervention with parent group (from 0.24 ± 1.11 to 0.24 ± 1.06), compared to control (from -0.03 ± 1.05 to 0.14 ± 1.00; F=8.61, p<0.05). 3. There was a significantly lower increase in BMI z score in the intervention with parent group (from 0.24 ± 1.11 to 0.24 ± 1.06), compared to intervention no parent group (from 0.28 ± 0.97 to 0.35 ± 0.96; F= 2.68, p=0.05). 4. In boys, no significant positive intervention effects were found. 5. BMI z-score increased significantly more in schools with low levels of implementation, when compared with schools with medium (F=5.03, p<0.05) and high (F=2.80, p<0.05) 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. <u>PHYSICAL ACTIVITY:</u> *After One Year* 6. Based on the physical activity questionnaire, the intervention with parent group increased their total physical activity by 9.0 min per day more than the control group (95% CI: 2.9, 15.2; p=0.004). 7. 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). 8. 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. 9. Based on the physical activity questionnaire, significant differences were found between the intervention with parent group and the control group on changes in active transportation to/from school (2.1 min day-1, 95% CI: 0.6, 3.6; p=0.006) and changes in school-related sporting activities (2.1 min day-1, 95% CI: 0.5, 3.7; p=0.012). No significant differences were found between the control group and intervention with no parent group. 10. Based on accelerometry data, MVPA increased an average of 4 minutes per day in the intervention with parent group, and decreased 7 minutes per day in the control group (F=5.1, p≤ 0.05; d=0.46). 11. Based on accelerometer data, PA of light intensity decreased an average of 21 minutes per day in the intervention with parent group and decreased 57 minutes on average per day in the control group (F=5.1, p≤ 0.05; d=0.54). *After Two Years* 12. IIn boys, school-related physical activity increased significantly more in the intervention groups (from 18.3 ± 18.7 to 25.2 ± 21.4) compared with the control group (from 22.6 ± 14.8 to 23.8 ± 16.5; F=3.4, p<0.05). 13. 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). 14. 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). 15. In girls, time spent in physical activity of light intensity decreased significantly less in the intervention groups (-2 min/day) compared with controls (-20 min/day; F=4.6, p<0.05).	**Effective for Overweight/obesity in the Study Population** **Effective for Overweight/obesity in Girls** **Not Effective for Overweight/obesity in Boys** **Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Girls** **Effective for Physical Activity in Boys** Study design = Intervention evaluation Effect size = Net positive for overweight/obesity in the study population and girls, neutral for overweight/obesity in boys, net positive for physical activity in the study population, girls and boys	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Bayer, von Kries (2009) Germany **Design** Intervention Evaluation Group randomized trial **Duration** High 12-24 months	**Measures** *Access to a healthy school environment* (time spent in VPA during school, dietary consumption) **Outcome(s) Affected** Fitness tests (parent questionnaire, motoric testing) and nutrition (questionnaire)	**Net Positive for Physical Activity for Study Population (School Physical Activity Policies)** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. Intervention students in the first sample had a significantly higher number of side to side jumps than control students (24.9, 95% CI: 24.4-25.3 vs. 24.0, 95% CI: 23.4-24.6; p=0.0056).	**Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Marcus, Nuberg (2009) Sweden **Design** Intervention Evaluation Group randomized trial **Duration** High August 2001 – June 2005	**Measures** *Access to a healthy school environment* (time spent in physical activity during core classes, dietary consumption) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]), physical activity (accelerometer), and nutrition (questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Boys (School Physical Activity Policies)** **Neutral for Overweight/obesity in Girls (School Physical Activity Policies)** **Neutral for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There was a significant difference between intervention and control groups with respect to prevalence of overweight & obese children in grades 2-4 and 3-4 from baseline to follow-up (difference= -6.0%, 95% CI: -10.6,-1.3%, p<0.05; difference=-9.2%, 95% CI: -16.9,-3.3, p<0.01, respectively). 2. For boys, the prevalence of overweight and obesity in the intervention schools was significantly reduced, whereas it increased in control schools from 2001-2005. The difference between the two groups was -7.7% (95% CI: -14.1,-1.2; p<0.05). No difference was found among girls. 3. There was an increase in the proportion of normal weight children in the intervention group, compared to the control group (2.3 vs 1.1%). The corresponding proportions of children who shifted from overweight or obese to normal weight were 14% and 7.5%, respectively (p=0.017). PHYSICAL ACTIVITY: 4. After adjustment for cluster of schools, there were no statistically significant differences between intervention and controls for levels of total physical activity and physical activity in after school care.	**Effective for Overweight/ obesity in the Study Population** **Effective for Overweight/ obesity in Boys** **Not Effective for Overweight/ obesity in Girls** **Not Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity in the study population and boys, neutral for overweight/ obesity for girls, neutral for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Manios, Kafatos (1998), Manios, Moschandreas (1999), Manios, Kafatos (1999), Manios, Moschandreas (2002), Kafatos, Manios (2007); Kafatos, Manios (2005); Manios, Kafatos (2006); Manios, Kafatos (2006) Crete **Design** Intervention Evaluation Group randomized trial **Duration** High 6 years	**Measures** *Access to a healthy school environment* (time spent in physical activity during PE classes, dietary consumption) **Outcome(s) Affected** Overweight/obesity (skinfold thickness, height and weight [body mass index]), physical activity (fitness measures, questionnaire), and nutrition (food frequency questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: *3 years* 1. Control students had a significantly higher change in mean BMI than intervention students [adjusted mean gain 1.8 kg/m^2 (SE=0.1) vs. 0.7 kg/m^2 (SE=0.1), p=0.001)] and suprailiac skinfold [2.9mm (SE=0.3) vs. 0.8mm (SE=0.2), p<0.05]. *6 years* 2. At the end of the intervention, control pupils had a significantly higher change in mean BMI [adjusted mean gain 4.28 kg/m^2 (SE=0.16) vs. 3.68 kg/m^2 (SE=0.16), p<0.05] and both bicep and tricep skinfolds [adjusted mean changes 4.47mm (SE=0.24) vs. 2.97mm (SE=0.24), p<0.001 and 7.90mm (SE=0.39) vs. 6.46mm (SE=0.38), p<0.05 respectively] than intervention students. PHYSICAL ACTIVITY: *3 years* 3. The amount of time spent in MVPA outside of school significantly improved for both the intervention and control groups (F=41.3, p<0.0005), however the degree of improvement was higher in the intervention group compared to controls (F=8.4, p<0.005). 4. While improvement in physical fitness scores occurred in both intervention and control groups, there was a significantly higher rate of improvement in the intervention group compared to controls in standing broad jump (F=13.0, p<0.0005), sit ups (F=36.4, p<0.0005), sit and reach (F=6.2, p=0.02) and endurance run test (F=18.0, p<0.005) *6 years* 5. After 6 years, the intervention group had significantly increased their MVPA outside of school from 1 hour per week at age 6, to about 5.5 hours per week at age 12 (p<0.05). 6. Intervention students had a significantly greater increase in time spent in MVPA outside of school over the 6 year period, compared to control students [adjusted mean increases of 281.3 (SE=22.0) vs. 174.5 (SE=25.7) min/week, p<0.05]. 7. MVPA levels outside of school were significantly higher for boys in the intervention group than the control group at post-intervention (510.2±404.6 vs. 350.7±308.0 min/week, p<0.001). There was no significant difference between intervention and control MVPA for girls.	**Effective for Overweight/ obesity in the Study Population** **Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Girls** **Effective for Physical Activity in Boys** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity in the study population, net positive for physical activity in the study population, boys, and girls	**Maintenance** OVERWEIGHT/OBESITY: *10 years* 1. At the 4 year follow-up after the end of the intervention, former intervention children had on average 0.7 kg/m^2 (SE=0.28) lower BMI than control children (p=0.019), after controlling for gender (p=0.024), baseline BMI values (p<0.001) and parental education status (p=0.60). 2. Using multivariable analysis, the odds of being overweight 4 years after follow-up was not significantly influenced by being in the intervention vs. control group (OR=0.84 95% CI: 0.52-1.35) PHYSICAL ACTIVITY: *10 years* 3. Intervention students significantly increased the time they devoted to MVPA outside of school from baseline to 10 year follow-up compared to controls [38.3 (SE=11.7) vs. -13.2 (SE=10.9) min/ week, p=0.038]. 4. MVPA levels outside of school were significantly higher for males in the intervention group than the control group at 10 year follow up (112.3±78.9 vs. 96.3±67.0 min/week, p=0.029). There was no significant difference between intervention and control MVPA for girls. **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Angelopoulos, Milionis (2009) Greece **Design** Intervention Evaluation Group randomized triall **Duration** Medium 12 months	**Measures** *Access to a healthy school environment* (time spent in physical education classes, dietary consumption) **Outcome(s) Affected** Moderate to vigorous physical activity (time spent in moderate-to-vigorous physical activity), overweight/obesity (height and weight [body mass index]), and nutrition (24 hour recall, questionnaire)	**Net Positive for Overweight/obesity in Lower-income Children (School Physical Activity Policies)** **Net Positive for Physical Activity in Lower-income Children (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. The mean BMI increase observed in the control children (+0.1, 95% CI -0.03 to 0.2) was significantly different compared to the decrease observed in intervention children (-1.1, 95% CI -1.2 to -0.9; p=0.047). PHYSICAL ACTIVITY: 2. There was an increase in the intervention group for mean time spent in moderate to vigorous physical activity [MVPA] (+2.2, 95% CI -2.6 to 7.1) compared to decreases in MVPA in the control group (-16.4, 95% CI -21.1 to -11.7; p=0.041).	**Effective for Overweight/ obesity in Lower-income Children (Study Population)** **Effective for Physical Activity in Lower-income Children (Study Population)** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity and physical activity in lower-income children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Simon, Wagner (2004), Simon, Wagner (2006), Simon, Schweitzer (2008) France **Design** Intervention Evaluation Group randomized trial **Duration** High 4 years	**Measures** *Access to a healthy school environment* (opportunities for non-competitive physical activity) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], bioelectrical impedance analysis) and physical activity (quesionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Intervention students had a lower increase in age and gender adjusted BMI ($p<0.02$) over time than controls. The difference across groups (intervention – controls) for the adjusted BMI changes (95% confidence interval) were -0.26 (-0.43,-0.08) kg/m^2 at 2 years, -0.29 (-0.51,-0.07) kg/m^2 at 3 years and -0.25 (-0.51, 0.01) kg/m^2 at 4 years. 2. In initially non-overweight participants the overall effect of age- and gender-adjusted BMI was significant throughout the study ($p<0.001$). The differences across groups for the adjusted BMI changes were -0.33 (-0.55,-0.12) kg/m^2 at 3 years and -0.36 (-0.60,-0.11) kg/m^2 at 4 years. 3. At 4 years, 4.2% of the initially non-overweight students were overweight in the intervention schools, compared to 9.8% in the control schools (OR= 0.41, 95% CI: 0.22 – 0.75, $p<0.01$). PHYSICAL ACTIVITY: 4. At 6 months, after adjustment for covariables, leisure organized physical activity significantly increased among the intervention students compared to controls, both in girls (OR 3.38; $p<0.01$) and in boys (OR 1.73; $p=0.01$). 5. At 6 months, after adjustment for covariables, there was a significant reduction in high sedentary behavior among adolescents, both in girls (OR=0.53; $p<10^{-3}$) and in boys (OR=0.52; $p<10^{-3}$). 6. At 4 years, 79% of the intervention students practiced at least one supervised physical activity outside school physical education classes as compared with 47% of the controls (OR= 2.34, 95% CI: 1.66 - 3.31). 7. After 4 years, supervised leisure physical activity increased in intervention students and slightly decreased in controls. The difference across groups was 66 minutes at 4 years ($p<0.0001$).	**Effective for Overweight/ obesity in the Study Population** **Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Girls** **Effective for Physical Activity in Boys** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity in the study population, net positive for physical activity in the study population, boys, and girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Lazaar, Aucouturier (2007) France **Design** Intervention Evaluation Group randomized trial **Duration** Medium 6 months	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index/BMI z-score], waist circumference, skinfold thickness, fat-free mass)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Girls (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Boys (School Physical Activity Policies)** **School Physical Activity Policies** <u>OVERWEIGHT/OBESITY:</u> 1. A larger proportion of obese children became overweight from baseline to follow-up in the intervention groups compared to the control groups; 16.3% ($p<0.05$) vs. 9.3% ($p<0.05$), respectively. In contrast, the proportion of non-obese children becoming obese or overweight was greater in the control groups than intervention groups; 14.8% ($p<0.05$) vs. 2.6% (p=not significant [ns]) *Girls* 2. There was a significant difference in the change in BMI between the obese intervention and obese control groups (-1.4% vs. 0.9%, $p<0.05$) and the non-obese intervention vs. non-obese control groups (-0.2% vs. 2.1%, $p<0.001$). 3. Waist circumference decreased in the intervention groups, while it increased in the control groups (-3.3% versus 2.8%, $p<0.001$). 4. BMI z-score declined significantly in all groups except for the obese control group. This decrease was greater in the obese intervention vs. obese control (-6.8% vs. -2.4%, $p<0.001$) and non-obese intervention vs. non-obese control (-3.1% vs. -1.8%, $p<0.01$). 5. Skinfold thickness decreased significantly over time in the obese intervention group and the non-obese intervention group (-4.4% and -3,2%, $p<0.001$, respectively). There was no change in the control groups. 6. Fat-free mass improved in all groups, with greater improvements in the obese intervention vs. obese control (5.2% vs. 2.4%, $p<0.001$) and non-obese intervention vs. non-obese control (4.0% vs. 0.6%, $p<0.05$). *Boys* 7. BMI z-score declined significantly only in the intervention groups. This change was significantly different between the obese intervention vs. obese control groups (-2.8% vs. 1.5%, $p<0.05$) and non-obese intervention vs. non-obese control groups (-2.4% vs. 2.6%, $p<0.01$). 8. Fat-free mass improved over time for both the intervention and control groups, with higher changes in the intervention groups (obese 6.4%, $p<0.001$; and non-obese 3.5%, $p<0.001$) than the control groups (obese 1.3%, p=ns; and non-obese 0.7%, p=ns) *Girls versus Boys* 9. Girls from the obese intervention group had a decline in BMI z-score higher than boys from the obese intervention group (-6.8% vs. -2.8%, $p<0.001$). Similar results were observed with waist circumference for both obese intervention (-3.3% vs. -0.5%, $p<0.01$) and non-obese intervention (-3.1% vs. -0.1%, $p<0.001$). Boys from the obese intervention group had a lower drop in skinfold thickness than did girls (-2.9% vs. -4.4%, $p<0.05$).	**Effective for Overweight/ obesity in the Study Population** **Effective for Overweight/ obesity in Girls** **Effective for Overweight/ obesity in Boys** Study design = Intervention Evaluation Effect size = Net positive for overweight/ obesity in the study population, girls, and boys	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Plachta-Danielzik, Pust (2007); Danielzik, Pust (2007); Danielzik, Pust (2005); Muller, Asbeck (2001) Germany **Design** Intervention Evaluation Group randomized trial **Duration** High 4 years	**Measures** *Access to a healthy school environment* (physical activity breaks during wellness classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], skinfold thickness)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: *After 1 year:* 1. During 1 year there was a significant change in fat mass in both groups. When compared with children in the intervention schools, children in the control schools showed disproportionate increases in the median triceps skinfold [TSF] (mean values= 13.0 vs. 11.3mm at 1 yr follow-up, p<0.01) as well as in percentage fat mass of overweight children (% increase= 1.6 vs. 0.4%, p<0.05). *After 4 years:* 2. No significant difference in prevalence or incidence of overweight and obesity between the intervention and control groups. 3. The 4 year incidence of overweight was reduced in the intervention group compared to the control group (36.5 vs. 41.7%, respectively). Comparing boys and girls, the effect was only seen in girls (-13.4% girls, +2.8% boys, p=ns). 4. The cumulative 4 year remission of overweight (moving from overweight to normal weight) was higher in the intervention group compared to the control group and reached significance for triceps skinfold thickness (39.3% vs. 22.6%; adjusted OR 2.09, 95% CI:1.20-3.62, p=0.0087).	**Effective for Overweight/ obesity in the Study Population** Study design = Intervention Evaluation Effect size = Net positive for overweight/ obesity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** High There were few differences between the children included in the study and the total number of children entering first grade between 1996-2001.
Author Bonhauser, Fernandez (2005) Chile **Design** Intervention Evaluation Group randomized trial **Duration** Medium 40 weeks	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Fitness performance tests (YoYo intermittent recovery test, 30 m speed test)	**Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** PHYSICAL ACTIVITY:: 1. There was a significant improvement in the intervention group compared with the control group in the three indicators used to assess physical performance. Maximum oxygen consumption improved by 8.5% in the intervention group and 1.8% in the control group (p<0.0001). Speed and jump performance increased by 10.3% and 9.8%, respectively, in the intervention group and only 6.9% and 2.4% in the control group (p<0.01).	**Effective for Physical Activity in the Study Population** Study design = Intervention Evaluation Effect size = Net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Graf, Koch (2008), Graf, Koch (2005) Germany **Design** Intervention Evaluation Group randomized trial **Duration** High 4 years	**Measures** *Access to a healthy school environment* (time spent in physical activity throughout the school day, health and wellness class) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and fitness performance tests (6 min run test, body coordination tests)	**Net Negative for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: *2 years* 1. There were no differences in body mass index (BMI) between intervention and control schools at baseline or 2 year follow-up. *4 years* 2. There were no differences in body mass index (BMI) at baseline or final examination between the intervention and control groups. 3. The increase in BMI from baseline to follow-up was higher in the intervention group compared to the control group (mean difference = 0.7, $p<0.001$). 4. Overweight and obese children had the highest increases in BMI (overweight: 3.9 kg/m^2 intervention and 3.0 kg/m^2 control; obese: 5.6 kg/m^2 intervention, 5.0 kg/m^2 control, $p<0.001$). PHYSICAL ACTIVITY: *2 years* 5. Girls in the intervention school had higher results in the lateral jump from baseline to 2 year follow-up (from 51.9±11.2 to 54.0±10.8, $p=0.034$). In addition, the increase in jumps was significantly higher in girls than boys (17.9±9.3 vs. 20.2±9.5, $p=0.010$). 6. In control schools, the increase in jumps was significantly higher in girls than in boys (11.5±9.2 vs. 14.3±9.2, $p=0.040$). 7. Multivariate regression showed that the mean increase in the lateral jump was 6.3 jumps higher in the intervention schools than in the control schools ($F=24.953$, $p<0.001$). 8. Multivariate regression showed that the mean increase in the 6 minute run test was 30.7 meters higher in the intervention schools than in the controls ($F=3.346$, $p=0.020$). *4 years* 9. The increase in endurance performance in the intervention group was higher than the control group at final examination after adjustment for age, sex, pre-intervention value and BMI classification at final examination (mean difference = 21.7, $p=0.055$). 10. Each item on the body coordination test for children improved in the intervention and control groups (adjusted for age, sex, pre-intervention value and BMI classification at final examination), but the mean difference between intervention and control groups was only significant in balancing backwards (mean difference=3.0; $p=0.007$) and lateral jumping (mean difference=3.1; $p=0.005$). 11. The overweight and obese children had the worst results for all motor tests in both the intervention and control schools and the lowest increase independent of participation in the intervention or control group. (Note: Differences found in outcomes based on gender were not assessed for full 4 year intervention.)	**Not Effective for Overweight/obesity in the Study Population** **Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Girls** Study design = Intervention Evaluation Effect size = Net negative for overweight/obesity in the study population, net positive for physical activity in the study population and girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Sahota, Rudolf (2001); Sahota, Rudolf (2001) Leeds, United Kingdom **Design** Intervention Evaluation Group randomized trial (delayed intervention) **Duration** Medium September 1996 - July 1997	**Measures** *Access to a healthy school environment* (time spent in physical activity throughout the school day, dietary consumption) **Outcome(s) Affected** Overweight/obesity (height and weight), nutrition (24-hour food recall, 3-day food diary, observations, menu analysis) physical activity (questionnaires)	**Neutral for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Neutral for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. No significant difference for overweight (weighted mean difference= -0.07, 95% CI: -0.22 to 0.08) or obese (weighted mean difference= -0.05, 95% CI: -0.22 to 0.11) between intervention and control children at follow-up. PHYSICAL ACTIVITY: 2. No significant difference in amount of physical activity or sedentary behavior between intervention and control schools.	**Not Effective for Overweight/ obesity in the Study Population** **Not Effective for Physical Activity in the Study Population** Study design = Intervention Evaluation Effect size = Neutral for overweight/ obesity in the study population, neutral for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** High Sociodemographic measures suggested that the evaluation sample populations generally reflected the Leeds school aged population, although there was a slight bias towards more advantaged children.
Author Ho, Gittelsohn (2008); Rosecrans, Gittelsohn (2008); Ho, Gittelsohn (2006) Canada **Design** Intervention Evaluation Non-randomized trial (delayed intervention) **Duration** Medium 9 months	**Measures** *Access to a healthy school environment* (time spent in physical activity throughout the school day, dietary consumption) **Outcome(s) Affected** Light, moderate and vigorous activity (accelerometer), overweight/obesity (height and weight [body mass index], and nutrition (questionnaire)	**Neutral for Overweight/obesity in Native American/Alaskan Natives (Study Population) (School Physical Activity Policies)** **Neutral for Physical Activity in Native American/Alaskan Natives (Study Population) (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. After adjustment for baseline values and other covariates, there was no significant difference in change in BMI between intervention and comparison groups. 2. On average, intervention respondents gained 1.8 kg (range: -9.4, 37.5 kg) and comparison respondents gained 0.1 kg (range: -15.1, 14.4kg). PHYSICAL ACTIVITY: 3. Total activity counts decreased for both intervention and comparison, whereas minutes of sedentary activity increased for both groups. There were no significant differences in changes in minutes of light physical activity/day, moderate physical activity/day or vigorous physical activity/day across the 2 groups even after adjustment for covariates. (Note: Results shown here are not limited to the school intervention, encompassing the community intervention as well [average age of those respondents ~40].)	**Not Effective for Overweight/ obesity in Native American/ Alaskan Natives (Study Population)** **Not Effective for Physical Activity in Native American/ Alaskan Natives (Study Population)** Study design = Intervention Evaluation Effect size = Neutral for overweight/ obesity and physical activity in Native American/ Alaskan Natives	**Maintenance** Not Reported **Sampling / Representativeness** High Sociodemographic measures suggested that the evaluation sample populations generally reflected the Leeds school aged population, although there was a slight bias towards more advantaged children.

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Kain, Leyton (2008) Chile **Design** Intervention Evaluation Non-randomized trial **Duration** High 21 months (2 school years)	**Measures** *Access to a healthy school environment* (time spent in physical education classes, parent involvement) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], waist circumference, skinfold thickness)	**Net Positive for Overweight/obesity in Boys (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. For boys, BMI z-score decreased significantly in the intervention group during the 1st period (from 0.62 to 0.44, p<0.05), and increased by 0.12 in the 3rd period (p<0.05). The difference between baseline and follow-up in period 3 was still significant (p<0.05). 2. BMI z-score for boys in the control group remained unchanged during the 1st two periods but increased significantly during the 3rd period (from 0.65 to 0.72, p<0.05). There was a significant difference between baseline and follow-up in period 3 for control boys (p<0.05). 3. Comparisons between intervention and control boys found that BMI z-score decreased among intervention boys during the 1st period, while there was no change in control boys. During period 2 (summer recess) there was no changes between either group, and in period 3 BMI z-score increased in both groups with the rise significantly greater for controls in the youngest age category. 4. The mean triceps skinfold thickness increased from 12.2 mm to 14.2 for boys in the intervention group (p<0.05) and from 13.0 mm to 15.6 for the control group (p<0.05) from the 1st to the 3rd period. 5. BMI z-score for girls in the intervention group declined from 0.64 to 0.51 (p<0.05) in the 1st period and increased to 0.58 (p<0.05) in the 3rd period. The difference between baseline and follow-up in period 3 was still significant (p<0.05). 6. BMI z-score for girls in the control group declined from 0.69 to 0.64 (non-significant) in the 1st period and increased to 0.72 (p<0.05) in the 3rd period. 7. Comparisons between the intervention and control girls found that BMI z-score declined (not significant) in the intervention girls during the 1st period, remained unchanged in both groups during period 2, and increased non-significantly in both groups in period 3 across all age categories. 8. Obesity prevalence in boys in the intervention group declined significantly during the 1st period (17.0% to 11.4%, p<0.05) compared to the control group (21.6% to 19.7%). In girls, the decline in obesity prevalence during period 1 was similar between groups. Changes during period 3 for both genders were similar between groups.	**Effective for Overweight/obesity in Boys** **Effective for Overweight/obesity in Girls** Study design = Intervention Evaluation Effect size = Net positive for overweight/obesity in boys and girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Sollerhed, Ejlertsson (2008) Sweden **Design** Intervention Evaluation Non-randomized trial **Duration** High 3 years	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and fitness performance tests (EUROFIT physical tests, 6 minute run test, motor skill tests)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Changes in BMI were significantly better for the intervention school compared to the control school [mean (standard deviation)= -0.32 (1.442) vs. 0.25 (1.576); p=0.033]. PHYSICAL ACTIVITY: 2. Children in the intervention school compared to controls had more positive changes in physical performance [mean= 1.09 (4.009) vs. -1.19 (4.179), p=0.003], endurance performance [mean= 1.42 (2.153) vs. -1.16 (2.213); p<0.001] and motor skill performance [mean= 0.57 (2.730) vs. -0.65 (2.496); p=0.010]. 3. There were no differences in strength performance between the intervention and control schools.	**Effective for Overweight/obesity in the Study Population** **Effective for Physical Activity in the Study Population** Study design = Intervention Evaluation Effect size = Net positive for physical activity and overweight/obesity for the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Jurg, Kremers (2006) Netherlands **Design** Intervention Evaluation Non-randomized trial **Duration** Medium One school year; August 2002 – June 2003	**Measures** *Access to a healthy school environment* (breaks for physical activity during classes) **Outcome(s) Affected** Physical activity (questionnaire)	**Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** PHYSICAL ACTIVITY: 1. Overall, students in the intervention group were 1.63 times more likely to meet the recommendation for exercise than those in the control group (OR=1.63, 95%CI: 1.02, 2.61; p<0.05). Most of this effect was seen in the 6th grade, with a 4x greater odds of meeting recommendations for intervention children compared to control (OR=4.33; 95%CI: 1.82-10.32; p<0.001). 2. Children in the control group in grade 6 were less physically active after the intervention compared to before by 26.49 min/day (p<0.01), while those in 6th grade in the intervention group decreased by 3.52 min/day (p>0.05).	**Effective for Physical Activity in the Study Population** Study design = Intervention Evaluation Effect size = Net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Liu, Hu (2008) China **Design** Intervention Evaluation Non-randomized trial **Duration** Medium 8 months	**Measures** *Access to a healthy school environment* (breaks for physical activity during classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and physical activity (physical activity monitors, questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Net Positive for Overweight/obesity in Girls (School Physical Activity Policies)** **Neutral for Overweight/obesity in Boys (School Physical Activity Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. The BMI of boys increased significantly after the intervention in both the intervention (0.86 kg/m^2) and control schools (0.72 kg/m^2), p<0.05 for both. Difference in BMI between groups was not significant at follow-up. 2. The BMI of girls in the control school increased significantly after intervention (+0.66 kg/m^2), while the BMI of girls in the intervention school decreased significantly (-0.47 kg/m^2), p<0.05 for both. There was a significant difference in the change in BMI between the intervention and control girls at follow-up, p<0.05. 3. The prevalence of overweight and obesity decreased in the intervention boys from 20.9% to 17.1% and 15.0% to 14.6%, respectively, and decreased in intervention girls from 15.3% to 12.0%, and 16.9% to 11.3% respectively. This contrasted with the prevalence of overweight and obesity in the control school which increased by 0.6-4.5% during the same time period. However, there was no significant difference in the change in prevalence of overweight and obesity between the intervention school and the control school. PHYSICAL ACTIVITY: 4. There were significant increases in the average daily physical activity energy expenditure (from 15.0 kcal/kg to 18.2 kcal/kg) and duration (from 2.8 hours to 3.3 hours) among students in the intervention school post- intervention (p<0.05 for both). This compared with significant decreases in these 2 variables in the control school over the same timescale (from 24.3 kcal/kg to 14.7 kcal/kg, and from 4.4 hours to 2.9 hours, respectively; p<0.05). 5. The change in energy expenditure and duration of physical activity between the intervention and control schools was significantly different, (p<0.05). 6. The average caloric expenditure per session of each grade ranged from 25.0 to 35.1 kcal. After adjustment for body weight, the average METS value per session of each grade ranged from 4.8 to 6.2 kcal/kg h.	**Effective for Overweight/obesity in the Study Population** **Effective for Overweight/obesity in Girls** **Not Effective for Overweight/obesity in Boys** **Effective for Physical Activity in the Study Population** Study design = Intervention Evaluation Effect size = Net positive for overweight/obesity in the study population and girls, neutral for overweight/obesity in boys, and net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Saksvig, Gittelsohn (2005) Canada **Design** Intervention Evaluation Before and after study **Duration** Medium 1 academic school year (1998-1999)	**Measures** *Access to a healthy school environment* (breaks for physical activity during classes, dietary consumption) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index]) and nutrition (24-hour recall)	**Net Negative for Overweight/obesity in Native American Children (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. Mean BMI increased significantly between baseline (20.5, SD=4.3) and follow-up (21.5, SD=4.8, p<0.001). 2. Students who were obese at baseline had a greater mean change in BMI than students who were not (p<0.05). 3. Percent of body fat also increased significantly from baseline (29.8, SD=10.7) to follow-up (31.0 SD=10.8, p<0.001). (Note: No results provided for physical activity breaks.)	**Not Effective for Overweight/ obesity in Native American Children (Study Population)** Study design = Intervention Evaluation Effect size = Net negative for overweight/ obesity in Native American Children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Wardle, Brodersen (2007) England **Design** Intervention Evaluation Before and after study **Duration** High 5 years	**Measures** *Access to a healthy school environment* (frequency of physical education classes) **Outcome(s) Affected** Overweight/obesity (Health and Behavior in Teenagers [HABITS] cohort study data)	**Net Positive for Overweight/obesity in Boys (School Physical Activity Policies)** **Neutral for Overweight/obesity in Girls (School Physical Activity Policies)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. After adjustment for age, initial values of waist circumference, and SES, mean waist circumference in year 11 for boys attending schools with one, two or three sessions of PE a week was 78.79 cm (SE=0.30), 78.07 cm (SE=0.63), and 75.05 cm (SE=0.81), respectively. Boys from schools with three weekly PE sessions had significantly smaller waists than boys from other schools (p=0.001). 2. After adjustment for age, initial values of waist circumference, and ethnic group, mean waist circumference in year 11 for girls attending one PE session compared to 2 sessions was not significant. Adjusted means were 74.47 cm (SE=0.35) vs 73.38 cm (SE=0.76), respectively (p=0.235). 3. There were no significant effects of school PE on changes in BMI or in BMI standard deviation scores in either boys or girls, or among overweight and obese compared with normal-weight pupils. School PE had a negligible and non-significant effect on the probability of becoming obese.	**Effective for Overweight/ obesity in Boys** **Not Effective for Overweight/ obesity in Girls** Study design = Intervention Evaluation Effect size = Net positive for overweight/ obesity in boys and neutral for overweight/ obesity in girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Trudeau, Shephard, Bouchard (2003); Trudeau, Laurencelle (2004); Trudeau, Shephard, Arsenault (2003); Trudeau, Shephard (2001); Trudeau, Espindola (2000) Canada **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (time spent in physical education classes) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], skinfold thickness) and physical activity (fitness tests, diaries, questionnaires)	**No Association for Overweight/obesity in the Study Population (School Physical Activity Policies)** **Positive Association for Physical Activity in the Study Population (School Physical Activity Policies)** **(Assumption: Individuals that participated in various forms of physical activity will be more likely to be active and weigh less than adults that did not participate in physical activity.)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There were no significant differences between intervention and control groups with respect to any of the body composition or body dimension variables. PHYSICAL ACTIVITY: 2. There was a significant but weak association between adult physical activity (PA) and the time spent in PA as a child (total PA, Pearson r=0.20; intense PA, r=0.18; light organized PA, r=0.12; non-organized PA, r=0.19), ($p<0.05$ for all). With the exception of the non-organized PA, these associations were due entirely to students who had been assigned to the enhanced primary school PE program. 3. Those active as adults had a greater childhood participation than their inactive peers in intense PA (1.16 ± 0.12 hrs/week vs 0.81 ± 0.09 hrs/week) and organized PA (0.41 ± 0.07 hrs/week vs 0.20 ± 0.04 hrs/week), but less participation in organized intense PA (0.27 ± 0.05 hrs/week vs 0.14 ± 0.03 hrs/week). 4. There were no differences in flexibility, sit-ups, or maximal work rate between intervention and control samples. 5. Flamingo balance test scores were better for the intervention groups of women and men than for the controls. The average number of trials needed to complete the test was 2.67 for the intervention and 5.44 for the control subjects ($F=7.303$; $df=1, 129$; $p<0.01$).	**No Association for Overweight/obesity for Study Population** **Positive Association for Physical Activity in the Study Population** Study design = Association Effect size = No association for overweight/obesity in the study population and positive association for physical activity in the study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported
Author Cleland, Dwyer (2008) Australia **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (time spent in physical activity during the school day) **Outcome(s) Affected** Physical activity (questionnaire, bicycle ergometer test, pedometers) and overweight/obesity (height and weight [body mass index])	**No Association for Overweight/obesity in the Study Population (School Physical Activity Policies)** **No Associaition for Physical Activity in the Study Population (School Physical Activity Policies)** **(Assumption: Children that attend schools with higher levels of compulsory physical activity will be more physically active in general and in adulthood.)** **School Physical Activity Policies** OVERWEIGHT/OBESITY: 1. There was no association between school physical activity provision and body mass index or the prevalence of overweight at baseline or follow up in males or females. PHYSICAL ACTIVITY: 2. No significant differences were found in the median physical activity or fitness at follow-up across schools that provided low, medium or high levels of compulsory physical activity. 3. There was no association between compulsory school physical activity provision at baseline and the prevalence of being in the top quarter of physical activity or fitness at follow-up.	**No Association for Overweight/obesity in the Study Population** **No Association for Physical Activity in the Study Population** Study design = Association Effect size = No association for overweight/obesity and physical activity in the study population	**Maintenance** Not Applicable **Sampling / Representativeness** High The Australian Schools Health and Fitness Survey was a nationally representative survey. The prevalence of overweight and obesity in the current study at follow-up (64% of men, 40% of women) was similar to that found in 25-34 year olds in another large Australian population-based sample and to that found in a national health survey.

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
School Environment Policies - United States				
Author Ritenbaugh, Teufel-Shone (2003); Teufel, Ritenbaugh (1998) New Mexico **Design** Intervention Evaluation Time series study **Duration** High 4 years	**Measures** *Access to healthy food environment* (providing water in coolers, increased access to fruits and vegetables, decreased access to high-fat foods and sugary soft drinks) **Outcome(s) Affected** Plasma glucose and insulin levels, sugar-sweetened beverage consumption, use of wellness facility (biological measures, vending machine sales data)	**Not Reported (for desired health outcomes)** **Net Positive for Facility use in Native American Students (School Food and Beverage Policies)** **School Environment Policies** FACILITY USE: 1. Increased use of the wellness facility over the first 3 years of operation. 8.5% of the total high school student population used the wellness center per day in Yr 1, while 28% used it daily in Yr 3.	**More Evidence Needed** Study design = Intervention evaluation Effect size = Not reported	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Cradock, Melly (2007) Massachusetts **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (school spatial construction and total space, required curriculum of PE) **Outcome(s) Affected** School physical activity (accelerometers)	**Positive Association for Physical Activity for Study Population (School Environment Policies)** **(Assumptions: Greater space per student allows for greater access to places to be physically active, which will lead to greater physical activity levels.)** **School Environment Policies** PHYSICAL ACTIVITY: 1. Having a larger school campus area per student (β=0.2244, p<0.001), building area per student (β =2.1302, p<0.05), and play area per student (β=0.347, p<0.01) was associated with increased physical activity in middle school students (adjusted for student age, gender, race/ethnicity, BMI, physical education days/week, day of the week, and time of day). 2. An approximate increase of 20% to 30% in magnitude of physical activity was associated with the difference in total campus, school and play areas per student. These increases translated into approximately 34 kcal/day, walking an extra 96 m/hour over an average school day, or walking 2 extra miles (3.2 km) weekly. 3. In each regression model, a positive association was observed between the number of days of physical education class and increased physical activity, although this association only reached statistical significance in one of the three final models after controlling for campus variables (β =0.1257; p<0.01).	**Positive Association for Physical Activity for Study Population** Study design = Association Effect size = Positive association for physical activity for study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Colabianchi, Kinsella (2009) Ohio **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (access to renovated playgrounds, playground equipment, supervised activities, and safety improvements) **Outcome(s) Affected** Physical activity and playground use (direct observation using System for Observing Play and Leisure Activity in Youth)	**Positive Association for Physical Activity for Study Population (School Environment Policies)** **Positive Association for Physical Activity for Boys (School Environment Policies)** **No Association for Physical Activity for Girls (School Environment Policies)** **Positive Association for Facility Use for Study Population (School Environment Policies)** **School Environment Policies** PHYSICAL ACTIVITY: 1. There were no significant differences between the proportion of at least moderately active at the renovated versus the unrenovated playgrounds in the total group or in any of the age/gender categories. There were no significant differences between the proportion of at least moderately active at the renovated versus the unrenovated playgrounds in the total group or in any of the age/gender categories. 2. Among all vigorously active people, children overall and boys were more likely to be vigorously active at the renovated playgrounds relative to the not-yet-renovated playgrounds (median values=0.333 vs. 0.170 and 0.333 vs. 0.205, respectively; p<0.05 for both). There was no significant difference in vigorous activity among girls at the renovated playgrounds versus the not-yet-renovated playgrounds. 3. Girls at the unrenovated playgrounds were more likely to be moderately active compared to girls at the renovated playgrounds (median renovated=0.162; median unrenovated=0.243; p<0.05). PLAYGROUND USE: 4. On average, more people utilized the renovated playgrounds (2.34 persons) compared to the not-yet-renovated playgrounds (1.62 persons), p=0.03.	**Positive Association for Physical Activity for Study Population** **Positive Association for Physical Activity for Boys** **No Association for Physical Activity for Girls** **Positive Association for Facility Use for Study Population** Study design = Association Effect size = Positive association for physical activity for the study population and boys and no association for girls, and positive association for facility use for study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported
School Environment Policies - International				
Author Stratton, Leonard (2002); Stratton (2000) England **Design** Intervention Evaluation Group randomized trial **Duration** Low 8 weeks	**Measures** *Access to healthy school environment* (access to brightly colored markings on the playground, and a single football) **Outcome(s) Affected** Overweight/ obesity (height and weight [body mass index]) and physical activity (heart rate to determine intensity of activity and duration)	**Neutral for Overweight/obesity in Study Population (School Environment Policies)** **Net Positive for Physical Activity for Study Population (School Environment Policies)** **School Environment Policies** OVERWEIGHT/OBESITY: 1. Height and weight in both groups changed little over the intervention. PHYSICAL ACTIVITY: 2. In the intervention group the % of playtime in MVPA (HRR50) increased from 35.1% to 46.2% after the intervention compared to a decrease from 40.5% to 39.1% in the control group. Differences in MVPA between schools increased after the intervention period. ANOVA analysis found a significant interaction for MVPA [F(1,278)=9.71; p≤ 0.01] and the main effect of the intervention [F(1, 278)= 5.73; p ≤ 0.05]. There was no significant main effect difference between the intervention and control groups. 3. Vigorous physical activity (HRR75) almost doubled in the intervention group (5.3% of playtime to 10.0%) compared to a small decrease in the control group (7.0% to 6.8%). ANOVA analysis found a significant interaction for HRR75 [F(1,278)= 6.0; p≤ 0.01] and the main effect of the intervention before and after the intervention [F(1,278)= 4.92; p≤ 0.05], but not between groups. 4. The duration of play during the intervention phase exceeded that of the pre-intervention phase in the control and experimental school by almost 7 min. and 6 min., respectively. ANOVA found a significant effect for duration of playtime [F(1,272)= 9.51; p≤ 0.01] with significant main effect differences in play duration before and after the intervention [F(1,272)= 25.67; p≤ 0.01]. There were no significant differences in play duration between intervention and control schools.	**Not Effective for Overweight/obesity for the Study Population** **Somewhat Effective for Physical Activity for the Study Population** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity for study population and net positve for physical activity	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Verstraete, Cardon (2006) Belgium **Design** Intervention Evaluation Group randomized trial **Duration** Low 3 months	**Measures** *Access to a healthy school environment* (access to game equipment and activity cards) **Outcome(s) Affected** Moderate, moderate-to-vigorous, and low intensity physical activity (accelerometers)	**Net Positive for Physical Activity in the Study Population (School Environment Policies)** **Net Positive for Physical Activity in Girls (School Environment Policies)** **Neutral for Physical Activity in Boys (School Environment Policies)** **School Environment Policies** PHYSICAL ACTIVITY: 1. The time spent on moderate-to-vigorous intensity activities decreased significantly more in the control group from 55.92 ± 22.87 to 43.37 ± 27.62 min, compared with the intervention group from 56.58 ± 29.37 to 53.40 ± 25.63 min (F=6.5, p<0.01). 2. The time spent on moderate intensity activities decreased in the control group from 41.10 ± 18.99 to 33.90 ± 21.14 min, while it increased in the intervention group from 41.05 ± 22.74 to 45.16 ± 21.55 min (F=10.6, p<0.01). 3. The time spent on low intensity activities increased significantly more in the control group from 43.20 ± 22.43 to 54.54 ± 26.37 min, compared with the intervention group from 42.10 ± 28.29 to 45.82 ± 24.93 min (F=4.73, p<0.05). 4. When including gender, the intervention was found to only be effective in girls during morning recess. In girls, the time spent on moderate-to-vigorous intensity activities significantly increased in the intervention group from 35.07 ± 24.38 to 38.95 ± 23.21 min, while it decreased in the control group from 48.50 ± 22.43 to 29.94 ± 19.95 min (F= 6.48, p< 0.01). In boys, the time spent on moderate-to-vigorous intensity activities decreased in both groups. 5. In girls, the time spent on moderate intensity activities significantly increased in the intervention group from 27.50 ± 19.82 to 36.39 ± 21.17 min, while it decreased in the control group from 38.99 ± 18.81 to 27.51 ± 18.46 min (F= 6.77, p< 0.01). In boys, no change was found in moderate intensity activities. 6. In girls, the time spent on low intensity activities decreased in the intervention group from 61.99 ± 23.44 to 59.49 ± 22.57 min, while it increased in the control group from 50.09 ± 22.17 to 67.44 ± 19.14 min (F= 12.64, p< 0.01). In boys, the time spent on low intensity activities increased in the intervention and control groups. 7. The time spent on moderate-to-vigorous intensity activities increased significantly in the intervention group from 47.86 ± 24.43 to 60.72 ± 21.95 min. while it decreased in the control group from 54.93 ± 23.89 to 44.74 ± 21.89 min (F=44.2, p<0.001). 8. The time spent on vigorous intensity activities increased significantly in the intervention group from 9.67± 12.43 to 11.17 ± 14.92 min while it decreased in the control group from 10.90 ± 14.14 to 5.46 ± 8.76 min (F=13.09, p<0.001). 9. The time spent on moderate intensity activities increased significantly in the intervention group from 38.19± 18.67 to 49.56 ± 17.68 min while it decreased in the control group from 44.03 ± 18.45 to 39.29 ± 17.82 min (F=28.34, p<0.001). 10. The time spent on low intensity activities decreased in the intervention group from 50.55 ± 23.46 to 37.81 ± 20.46 min while it increased in the control group from 43.21 ± 22.36 to 53.81 ± 21.28 min (F=50.50, p<0.001). 11. No significant gender differences were found for the accelerometer data during lunch break.	**Somewhat Effective for Physical Activity in the Study Population** **Somewhat Effective for Physical Activity in Girls** **Not Effective for Physical Activity for Boys** Study design = Intervention evaluation Effect size = Net positive for physical activity in the study population and girls and neutral for physical activity in boys	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Loucaides, Jago (2009) Cyprus **Design** Intervention Evaluation Group randomized trial **Duration** Low ~4 weeks	**Measures** *Access to a healthy school environment* (access to markings on the playground, sports equipment, and allocation of courts at specific times for specific uses) **Outcome(s) Affected** Physical activity (accelerometers)	**Net Positive for Physical Activity in the Study Population (School Environment Policies)** **Net Positive for Physical Activity in Boys (School Environment Policies)** **Net Positive for Physical Activity in Girls (School Environment Policies)** **School Environment Policies** PHYSICAL ACTIVITY: 1. For school breaks, there was a significant interaction between school and gender [F(2,222)=7.16, p<0.01]. Boys in the two intervention schools had higher mean step counts [full intervention = 1650 (SD=498) steps; court allocation only= 1643 (SD= 609) steps] than boys in the control school [1179 (SD= 392) steps]. Girls in the full intervention school [mean steps = 1150 (SD= 339)] had higher step counts than girls in the other two schools [court allocation only = 1004 (SD= 525) steps; control = 962 (SD= 466) steps]. 2. For school breaks, there was also a significant time by school interaction [F(2,222)=3.08, p<0.05]. While there were no differences in mean step counts at pre-intervention between intervention and control schools, there were significant differences at post-intervention. Mean step counts in both intervention schools [full intervention = 1427 (SD= 499) steps; court allocation only = 1331 (SD= 651) steps] were higher than the control school [1053 (SD=447) steps], p<0.001 and p<0.01, respectively. 3. There were no significant differences between intervention and control groups for mean steps during after-school activity. Boys had higher step counts after school in comparison to girls (η2 effect size = 0.12, p<0.001).	**Somewhat Effective for Physical Activity for Study Population** **Somewhat Effective for Physical Activity for Boys** **Somewhat Effective for Physical Activity for Girls** Study design = Intervention evaluation Effect size = Net positive for physical activity in the study population, boys, and girls	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Stratton, Mullan (2005) Wales, England **Design** Intervention Evaluation Non-randomized trial **Duration** Not Reported	**Measures** *Access to a healthy school environment* (access to playground markings at school, supervision, and small pieces of sports equipment) **Outcome(s) Affected** Overweight/ obesity (height and weight [body mass index]) and moderate-to-vigorous and vigorous intensity physical activity (heart rate telemeters)	**Neutral for Overweight/obesity in the Study Population (School Environment Policies)** **Net Positive for Physical Activity in the Study Population (School Environment Policies)** **School Environment Policies** OVERWEIGHT/OBESITY: 1. There were no significant differences in body mass or stature between girls and boys, or control and intervention groups, before or after the intervention. PHYSICAL ACTIVITY: 2. Moderate-to-vigorous physical activity increased in the intervention group from 36.7% (±23.9) to 50.3% (±28.9) of playtime compared to a decrease from 39.9% (±21.1) to 33.4% (±18.4) in the control group (F1,204 = 13.7; p<0.01). 3. Vigorous physical activity increased in the intervention group from 7.9% (±10.9) to 12.4% (±15.8) compared to little change from 8.0% (±10.1) to 8.0% (±10.9) in the control group (F1,204 = 4.05; p<0.03). 4. For intervention schools, children aged 4-7 years increased their moderate-to-vigorous physical activity (40.9% to 43.3%) and vigorous physical activity (7.5% to 9.1%), although not significantly. 5. For intervention schools, children aged 8-11 years increased their moderate-to-vigorous physical activity (33.5% to 40.4%) and vigorous physical activity (8.8% to 12.9%), although not significantly. 6. For intervention schools, boys increased their moderate-to-vigorous physical activity from baseline to follow-up from 40.6% to 44.8% and girls from 35.2% to 39.8%, although not significantly. 7. For intervention schools, boys increased their vigorous physical activity from baseline to follow-up from 9.8% to 12.6% and girls from 5.9% to 7.9%, although not significantly.	**More Evidence Needed** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity and net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Ridgers, Stratton (2007); Ridgers, Stratton (2007) England **Design** Intervention Evaluation Time series with control group **Duration** High Permanent environment change	**Measures** *Access to a healthy school environment* (access to playground markings at school and clearly defined zones) **Outcome(s)** Affected Moderate-to-vigorous and vigorous intensity physical activity (accelerometer, heart rate monitor)	**Net Positive for Physical Activity for Lower-Income Children (School Environment Policies)** **School Environment Policies** PHYSICAL ACTIVITY: 1. At 6 weeks post intervention, analyses of accelerometer data (n=242) indicated a statistically significant effect, with the intervention group engaging in 5.95% (CI= 0.14, 11.77) more MVPA during recess than the control group (crude analysis). After adjusting for potential confounders, the difference was not significant. Boys engaged in 7.2% more MVPA than girls in recess [β=7.14 (SE=1.42); p<0.0001]. In addition, as BMI increased, recess MVPA decreased (β= -0.55 [SE=0.24]; p=0.024). 2. At 6 weeks post intervention, accelerometer data (n=242) indicated a statistically significant effect, with the intervention group engaging in 1.7% (CI= 0.01, 3.39) more VPA during recess than the control group (crude analysis). After adjusting for potential confounders, the difference was not significant. Boys engaged in 3.1% more VPA than girls during recess (β= -3.05 [SE=0.66]; p=0.001). 3. At six weeks post intervention, the intervention effect was stronger for younger children for recess MVPA (β= -3.03 [SE=2.75]; p=0.01) and VPA [β= -0.82 (SE=0.48); p=0.09]. Analysis also indicated that the more daily recess time available, the stronger the intervention effect on recess MVPA (β= 0.25 [SE=0.14]; p=0.07). 4. At 6 months post intervention, analysis using heart rate data (n=394) showed that intervention school children engaged in 4% more MVPA (β =4.03 [CI= 0.15, 7.91]; p=0.04) and 2.4% more VPA (β= 2.43 [CI= 0.06, 4.80]; p=0.05) over time during recess than control children. Analysis using accelerometer data (n=280) indicated that intervention school children engaged in 4.5% more MVPA (β= 4.53 [CI=0.59, 8.47]; p=0.03) and 2.3% more VPA (β= 2.32 [CI=0.71, 3.93]; p=0.005) over time than control children. 5. At 6 months post intervention, analysis using heart rate data (n=394) indicated the intervention effect was stronger for MVPA and VPA with increasing recess duration (each p<0.05). Analysis using accelerometer data (n=280) also found that the duration of recess was positively associated with increased MVPA (p<0.10). 6. At 6 months post intervention, analysis using heart rate data (n=394) showed the intervention effect was stronger for children who were less active at baseline for MVPA (p<0.05) and VPA (p<0.10). 7. At 6 weeks and 6 months post intervention, the intervention effect was stronger for younger children, as younger children were found to engage in higher levels of MVPA (6 weeks p<0.05; 6 months p<0.10).	**Effective for Physical Activity in Lower-income Children (Study Population)** Study design = Intervention evaluation Effect size = Net positive for physical activity in lower-income children (study population)	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Dyment, Bell (2007); Dyment, Bell (2008) Canada **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (access to a school environment with natural and aesthetically pleasing components) **Outcome(s) Affected** Vigorous and moderate intensity physical activity (questionnaire)	**Positive Association for Physical Activity in the Study Population (School Environment Policies)** **(Assumptions: Increased school greening will promote physical activity in children.)** **School Environment Policies** PHYSICAL ACTIVITY: 1. The majority of the respondents (71%) indicated that greening resulted in more moderate and/or light physical activity (17% no change, 1% less activity, 11% unsure). Respondents indicated that turf and asphalt support more vigorous and moderate levels of activity and greened areas of school grounds support more moderate and light activity. (Note: Statistical significance was not assessed.)	**Positive Association for Physical Activity for Study Population** Study design = Association Effect size = Positive association in the physical activity for study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Willenberg, Ashbolt (2009) Australia **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (access to multiple surfaces for play, sports equipment, and playground structures) **Outcome(s) Affected** Moderate and vigorous intensity physical activity (direct observation using System for Observing Play and Leisure Activity in Youth)	**Positive Association for Physical Activity in the Study Population (School Environment Policies)** **(Assumption: Greater access to resources for physical activity leads to greater physical activity levels in children.)** **School Environment Policies** PHYSICAL ACTIVITY: 1. More students participated in vigorous physical activity (VPA) when loose equipment (33% vs. 20%; p<0.001) and teacher supervision (29% vs. 22%; p<0.001) were present, compared to when they were not. Higher levels of VPA were particularly marked for boys (p<0.001). 2. Compared with all other settings, the proportion of children engaged in moderate physical activity (MPA) was higher in settings where fixed play equipment were located (35% vs. 20%; p<0.001). There was a corresponding lower proportion of children, particularly boys, engaged in VPA in settings with fixed play equipment (23% vs. 38%; p<0.001). NUTRITION: 3. The proportion of children engaged in MPA in areas with marked hard surfaces was greater than for areas with unmarked hard surfaces (sport markings: 34% vs. 20%, p<0.001; play markings: 25% vs. 20%; p=0.04). 4. No differences in levels of MPA or VPA were detected between settings with different surface types (hard vs. soft). On fields, no difference was found with the addition of sport markings. 5. A greater proportion of boys engaged in VPA overall compared with girls (32% vs. 29%; p<0.02). 6. A greater proportion of girls engaged in sedentary activity than boys (49% vs. 39%, p<0.001).	**Positive Association in the Physical Activity for Study Population** Study design = Intervention evaluation Effect size = Positive association in the physical activity for study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported
Author Haugh, Torsheim (2008) Norway **Design** Association Cross-sectional study **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (access to designated areas for physical activity and open green space) **Outcome(s) Affected** Physical activity (questionnaire)	**Positive Association for Physical Activity for 13-15 Year Olds (School Environment Policies)** **No Association for Physical Activity for 6-12 Year Olds (School Environment Policies)** **(Assumption: Greater availability of outdoor physical activity resources leads to greater physical activity levels among students.)** **School Environment Policies** PHYSICAL ACTIVITY: 1. For all ages, significantly more boys than girls were engaged in physical activity (p<0.05). Participation reached a peak at grade 6 for both genders. A significant reduction in physical activity from the previous grade was observed in higher grades, starting age 12 for girls and age 13 for boys (p<0.05). 2. Students age 13-15 with a larger number of outdoor facilities at school had nearly 3 times higher odds of being physically active compared with students in schools with fewer facilities (Boys: OR=2.69, 95% CI=1.21,5.98; Girls: OR=2.90,95%CI=1.32,6.37). 3. Significantly higher odds (p<0.05) for school break physical activity were observed for boys age 13-15 at schools with the following outdoor characteristics: soccer field (OR=1.68, 95%CI=1.15,2.45); areas for hopscotch/skipping rope (OR=2.53, 95%CI=1.55,4.13), and playground equipment (OR=1.66, 95%CI=1.16,2.37). 4. Boys and girls age 13-15 had significantly (p<0.05) higher odds of being physically activity in schools with a sledding hill (Boys: OR=1.70, 95%CI=1.23, 2.35; Girls: OR=1.58, 95%CI=1.11, 2.24). 5. No association between the school environment and physical activity were found with students at the primary school level (ages 6-12).	**Positive Association for Physical Activity for 13-15 Year Olds** **No Association for Physical Activity for 6-12 Year Olds** Study design = Intervention evaluation Effect size =Positive association for 13-15 year olds, no association for 6-12 year olds	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
School Physical Activity and Environment Policies - United States				
Author Williamson, Copeland (2007) No location specified **Design** Intervention Evaluation Group randomized trial **Duration** High 2 academic years	**Measures** *Access to healthy school environment* (physical activity during class time/recess) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], body fat composition), physical activity (SAPAC and the Godin-Shephard Leisure Time Questionnaire), nutrition (digital photography of food)	**Neutral for Overweight/obesity for Children in the Study Population (School Physical Activity and Environment Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** OVERWEIGHT/OBESITY: 1. Analysis of change in body mass index (BMI) z scores from baseline as a function of treatment arm (intervention or control) indicated no significant effects related to treatment arm, (p=0.5458). 2. There was a negative correlation (r= -0.18) between baseline BMI z scores and changes in BMI z scores at 18 months for intervention and control, indicating that at risk for overweight and overweight children tended to either lose weight, relative to changes in height and age, or gain modest amounts of weight. 3. The success rates for weight gain prevention at month 18 for the intervention group were 51% and 54.7% for control. There was a positive correlation (r= 0.17) between baseline BMI z-scores and success of weight gain prevention for intervention and control, indicating that children with higher BMI z scores at baseline were more likely to decrease or maintain their BMI z score in comparison with children with lower baseline BMI z scores. 4. Baseline % body fat (BF) was significantly associated with changes in % BF at 18 months, with lower levels of %BF at baseline being associated with greater increases in %BF during intervention period (r= -0.09, p<0.02). This indicates that fatter children (in both groups) at baseline tended to lose fat during the intervention at rates that were lower than those for children who were lean at baseline (r= -0.12, p <0.05 for control, r= -0.07, p>0.05 for intervention). PHYSICAL ACTIVITY: 5. Marginally significant effects of the intervention were observed for the physical activity checklist measure of physical activity. The intervention group was associated with increased minutes of physical activity (22 ± 4.8), while control group had a non-significant decrease in physical activity. The effect size for this difference was 0.23, (p=0.06).	**Not Effective for Overweight/obesity in the Study Population** **Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Neutral for overweight/obesity in children with higher baseline BMI, net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Durant, Harris (2009) Massachusetts, Ohio, and California **Design** Association Cross-sectional **Duration** Not Applicable	**Measures** *Access to a healthy school environment* (physical activity equipment, supervised physical activities and places to play at school) **Outcome(s) Affected** Physical activity (survey) and overweight/obesity (height and weight [body mass index])	**No Association for Overweight/obesity in the Study Population (School Physical Activity and Environment Policies)** **Positive Association for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **(Assumptions: Greater frequency of physical education classes, greater access to school play equipment, provision of supervised physical activity after school, and access to school fields after school will lead to increased physical activity levels in youth, which will lead to lower body mass index and overweight/obesity.)** **School Physical Activity and Environment Policies** OVERWEIGHT/OBESITY: 1. In the adjusted analysis, none of the school environment or policy variables were correlated with BMI or BMI z scores. PHYSICAL ACTIVITY: 2. Both the number of days physical education was offered and accessibility of school fields for use after school were positively associated with overall physical activity even after adjustment for race-ethnicity, site, gender and age (β=0.286, p=0.002, semipartial correlation= 0.236 and β=0.801, p=0.016, semipartial correlation= 0.186; respectively). 3. Being physically active at a school with recreation facilities open to the public was a significant predictor of overall physical activity in adjusted analysis (β=0.876, p=0.009, semipartial correlation =0.205). 4. Perceived accessibility of after-school supervised physical activities and accessibility of school equipment were not significant correlates of physical activity in either unadjusted or adjusted analyses. 5. In multivariable linear regression modeling that tested the independent effect of each school factor on overall physical activity, while controlling for demographics, weekly physical education classes was the only school factor that remained significantly associated with overall physical activity (β=0.264, p=0.007, semipartial correlation = 0.136). Access to school play areas or fields after school was marginally significant (β=0.626, p=0.077, semipartial correlation=0.136).	**No Association for Overweight/obesity in the Study Population** **Positive Association for Physical Activity in the Study Population** Study design = Association Effect size = No association for overweight/obesity for the total population, positive association for physical activity for the study population	**Maintenance** Not Applicable **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
School Physical Activity and Environment Policies - International				
Author de Barros, Nahas (2009); Nahas, de Barros (2009) Brazil **Design** Intervention Evaluation Group randomized trial **Duration** Medium 9 months	**Measures** *Access to a healthy school environment* (the number of days/week with 60+ minutes of moderate-to-vigorous physical activity, access to equipment and space for play) **Outcome(s) Affected** Moderate to vigorous physical activity and active transportation. (questionnaire)	**Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** PHYSICAL ACTIVITY: 1. At post-intervention the proportion of subjects meeting physical activity recommendations (≥ 5 days/week of 60+ min. MVPA) decreased in both the intervention (8%) and control (14%) groups, but the intervention was effective at minimizing this reduction in the intervention group. The difference between intervention and controls post-intervention was significant, (p=0.001). 2. Post-intervention, the control group had significantly fewer days per week accumulating 60+ minutes of MVPA compared to the intervention group (2.6 days vs. 3.3 days, respectively; p<0.001). 3. There was a significant reduction in the prevalence of physical inactivity observed in the intervention group (3.2% decrease for Florianopolis; 6.5% decrease for Recife), while a rise was found in the control group (0.45% increase for Florianopolis; 4.7% increase for Recife). The difference between the intervention and controls at post-intervention was significant for Recife (p=0.03) and neared significance in Florianopolis (p=0.06).	**Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for physical activity for the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported
Author Verstraete, Cardon, (2006); Verstraete, Cardon (2007) Belgium **Design** Intervention Evaluation Group randomized trial **Duration** High Fall 2002 – Spring 2004	**Measures** *Access to a healthy school environment* (school policy to increase physical activity through PE classes, games at recess, lunch and after school) **Outcome(s) Affected** Moderate and moderate to vigorous physical activity (accelerometer, questionnaire) and overweight/obesity (biceps, triceps, subscapular, suprailiac and calf skinfolds)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity and Environment Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** OVERWEIGHT/OBESITY: 1. Children's sum of skinfolds were significantly higher in the control schools than the intervention schools at post-test (64.04 ± 39.67 vs. 55.56 ± 27.79 mm; F=5.24, p<0.05). PHYSICAL ACTIVITY: 2. Based on the analysis of SOFIT observations, the proportion of physical education class time spent on moderate-to-vigorous physical activity (MVPA) at posttest was significantly higher in the intervention group compared to the control group (F[1,14]= 15.78, p<0.001). The average MVPA engagement increased from 42% to 56% in the intervention group and from 37% to 41% in the control group. The proportion of MVPA engagement within the lesson contexts management, general knowledge, fitness activities and game play was significantly higher in the intervention vs. control group (data not shown). 3. Based on accelerometer data, the time spent on MVPA was significantly higher at posttest in the intervention group compared to the control groups (141.5 ± 46.84 min/day vs. 125.13 ± 33.52 min/day; F=10.62, p<0.01). This was also true for time spent on moderate-intensity PA (122.90 ± 37.86 vs. 107.45 ± 27.11; F=15.32, p<0.01). This represents a smaller decrease in moderate physical activity (PA) and MVPA engagement from baseline for the intervention schools compared with the control schools. 4. Based on results from the PA questionnaire, at posttest, children in the intervention group engaged in more moderate-intensity PA in leisure time compared to children in the control group (12.25 ± 18.44 min/day vs. 8.66 ± 15.40 min/day; F=5.23, p<0.05). 5. There were no significant effects of the intervention on the physical fitness tests at post-test. However, in girls, explosive strength (standing broad jump) at posttest was significantly higher in the intervention schools than control schools (150.91 ± 22.17 vs. 144.18 ± 22.87; F= 4.63, p<0.05).	**Effective for Overweight/ obesity in theStudy Population** **Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/ obesity and physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Reed, Warburton (2008); Naylor, Macdonald (2006); Naylor, Macdonald (2008); Naylor, Macdonald (2006); Ahamed, Macdonald (2007) Canada **Design** Intervention Evaluation Group randomized trial **Duration** High 16 months	**Measures** *Access to healthy school environment* (increase school physical activity by adding moderate to intense PA to existing physical education classes) **Outcome(s) Affected** Overweight/ obesity (height and weight [body mass index]) and physical activity (20 m shuttle run test, pedometers, questionnaire)	**Neutral for Overweight/obesity in the Study Population (School Physical Activity and Environment Policies)** **Neutral for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **Net Positive for Physical Activity in Boys (School Physical Activity and Environment Policies)** **Neutral for Physical Activity in Girls (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** OVERWEIGHT/OBESITY: 1. There were no significant differences between groups for change in BMI or in any of the blood variables. PHYSICAL ACTIVITY: 2. Boys in the liaison intervention schools took 1175 more steps per day, on average, than boys in the usual practice group (95% CI= 97, 2253, p<0.03). 3. Boys in the champion intervention schools tended to have a higher step count than boys in the usual practice group (+804 steps/ day; 95% CI= -341, 1949), not significant. 4. There was no significant difference in girls' step counts across groups. 5. The intervention schools had a 20.4% greater increase in fitness (20-m shuttle run) compared with the usual practice schools (p<0.05). 6. Overall, intervention children had a higher average PA score (questionnaire) than usual practice children (2.61±0.42 versus 2.55±0.37), although not significantly.	**Not Effective for Overweight/ obesity in the Study Population** **Not Effective for Physical Activity in the Study Population** **Effective for Physical Activity in Boys** **Not Effective for Physical Activity in Girls** Study design = Intervention evaluation Effect size = Neutral for overweight/ obesity in the study population, neutral for physical activity in the study population and girls, and net positive for physical activity in boys.	**Maintenance** Not Reported **Sampling / Representativeness** High 46% East and South East Asian, 24% North Americans of European descent, 10% South Asian, 13% mixed and 8% other (evaluation sample). This is representative of the greater Vancouver area.

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Van Beurden, Barnett (2003) Australia **Design** Intervention Evaluation Group randomized trial **Duration** Medium 1 year	**Measures** *Access to a healthy school environment* (increase school physical activity through PA programs and improved equipment) **Outcome(s) Affected** Moderate to vigorous and vigorous physical activity and fundamental movement skills (direct observation using System for Observing Fitness Instruction Time, static balance, sprint run, vertical jump, kick, hop, catch, overhand throw, and side gallop)	**Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** <u>PHYSICAL ACTIVITY:</u> 1. At follow up, improvements in every Fundamental Movement Skill (FMS) were observed for both boys and girls in the intervention group compared to controls. Overall, there was a 16.8% improvement for all skills combined ($z= 9.64$, $p<0.0001$). The smallest change was a 7% improvement in throwing among girls and the largest was a 26% improvement in sprint run for boys. 2. Follow up results of PA in physical education lessons revealed a 4.5% non- significant increase in % moderate-to-vigorous physical activity (MVPA) in intervention schools, compared to control schools ($z= 1.33$, $p=0.08$), however a specific analysis of vigorous physical activity showed a significant 3.3% increase in vigorous physical activity compared to controls ($z= 2.43$, $p=0.008$). 3. In intervention schools during "fitness" lesson time there was a significant increase in % MVPA ($\beta= 0.608$, $z= 3.07$, $p<0.001$), during "skill" there was no change in % MVPA and during "game" there was a decrease in %MVPA ($\beta= -0.290$, $z= 1.66$, $p=0.045$).	**Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size =Net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
Author Taylor, McAuley (2006); Taylor, McAuley (2007); Taylor, McAuley (2008); Williden, Taylor (2006) New Zealand **Design** Intervention Evaluation Non-randomized trial **Duration** High 2 years	**Measures** *Access to healthy school environment* (provide sport/play equipment during school breaks and increase opportunities for physical activity during the school day) **Outcome(s) Affected** Overweight/obesity (height and weight [body mass index], waist circumference), physical activity (accelerometer, 7-day recall questionnaire) and nutrition (3-day short food questionnaire)	**Net Positive for Overweight/obesity in the Study Population (School Physical Activity and Environment Policies)** **Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **Net Positive for Sedentary Behavior in the Study Population** **School Physical Activity and Environment Policies** OVERWEIGHT/OBESITY: 1. Adjusting for baseline, mean BMI z score was significantly lower in intervention children than in control children by 0.09 (95% CI= 0.01, 0.18, p<0.05) after 1 yr and 0.26 (95% CI= 0.21, 0.32, p<0.05) at 2 yr. 2. Waist circumference was significantly lower at 2 yr in intervention children (-1.0 cm, 95% CI= -2.0, 0.0, p<0.05). 3. Mean BMI z score (adjusted for baseline z score, clustering, age, sex, activity rating) was significantly lower at both 1 yr (-0.08; 95% CI=-0.12,-0.04) and 2 yr (-0.29; 95% CI=-0.38,-0.21) in intervention than in control normal-weight children (p-value not reported). No intervention effect was observed in overweight children at either time point. PHYSICAL ACTIVITY: 4. Year 1 accelerometer counts per minute (adjusted for baseline activity, age, sex) were 28% (95% CI= 0.11, 0.47) higher in intervention compared with control children. 5. Year 1 average accelerometer counts were higher in intervention children both during school hours (ratio of geometric means of intervention to control= 1.38, 95% CI= 1.18, 1.62) and home time activity (ratio= 1.20, 95%CI= 1.04, 1.37). Differences were no longer significant after 2 years. 6. After year 1, moderate-to-vigorous activity was 10% (95% CI= 0.02, 0.18) or 26 minutes more in intervention compared with control children, while sedentary activity decreased in intervention children compared to controls (ratio 0.91, 95% CI= 0.85, 0.97). SEDENTARY BEHAVIOR: 7. After year 1, sedentary activity decreased in intervention children compared to controls (ratio 0.91, 95% CI= 0.85, 0.97). (Note: Not all p-values were provided.)	**Effective for Overweight/obesity in the Study Population** **Effective for Physical Activity in the Study Population** **Effective for Sedentary Behavior in the Study Population** Study design = Intervention evaluation Effect size = Net positive for overweight/obesity, physical activity, and sedentary behavior for study population	**Maintenance** *2 year follow-up: n=554* 1. Mean adjusted BMI z score was significantly lower in intervention than in control children by 0.30 units (95% CI= 0.24, 0.36) at the end of the intervention and by 0.21 units (95% CI= 0.14, 0.29) at 2 year follow-up. 2. The adjusted likelihood of being overweight was significantly less in intervention children at the end of the 2 year intervention (RR: 0.81; 95% CI= 0.69, 0.94), but was no longer significant at 2 year follow-up. (Note: No p-values were reported for follow-up results.) **Sampling / Representativeness** Not Reported
Author Cass, Price (2003) Australia **Design** Intervention Evaluation Non-randomized trial **Duration** High 3 years	**Measures** *Access to a healthy school environment* (policy to support environment changes: informal physical activity (PA) breaks, facility improvement, new equipment, and free after-school activities) **Outcome(s) Affected** Physical activity (survey)	**Net Positive for Physical Activity in the Study Population (School Physical Activity and Environment Policies)** **School Physical Activity and Environment Policies** PHYSICAL ACTIVITY: 1. The proportion of students participating in vigorous activity was the same in the intervention and control group (p=ns). 2. Girls in the intervention group participated in more activities than girls in the control group (63% more in summer and 43% more in winter, p-value not shown). 3. At post-intervention, intervention students spent more time in moderate and vigorous activities and less time in sedentary activities than the control students (summer activities $\chi 2$= 14.8, 2df, p<0.01; winter activities $\chi 2$= 6.24, 2df, p<0.05). SEDENTARY BEHAVIOR: 4. Students from the intervention group reported spending less time on sedentary recreation than students from the control group (3.2 hours/day compared to 3.9 hours/day; t=2.48, p<0.05). (Note: Data collection and analysis only included girls.)	**Effective for Physical Activity in the Study Population** Study design = Intervention evaluation Effect size =Net positive for physical activity in the study population	**Maintenance** Not Reported **Sampling / Representativeness** Not Reported

IMPACT TABLES

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Physical Activity Policies - United States						
Author Sallis, McKenzie (2003); McKenzie, Sallis (2004); Murphy Zive, Pelletier (2002) San Diego County, California	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children in the 12 intervention schools were exposed to the intervention. **High-Risk Population** High 11-13 year olds (target population) 44.5% non-White, 39.5% received free/reduced price lunches (intervention population)	**Representative** High All children in the 12 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component Project M-SPAN (Middle School Physical Activity and Nutrition)- Increased physical activity time during class, improved teacher instructional skills; activity/ physical education equipment available to students; class credit for out of physical education activities; more accessible activity areas MULTI-COMPONENT: 1. School policy to reduce fat content of breakfast, lunch, a la carte and school store foods through purchasing, preparing and serving practices on middle-school campuses COMPLEX: 1. Student health committees 2. Hours of operation reduced in the school store 3. Flyers, posters, newsletters to promote programs **Feasibility** Intervention activities: School menu changes, increased physical activity during physical education class, provision of activity/physical education equipment, class credit for out of physical education activities, increased accessibility of activity areas, physical activity promotional activities (e.g., flyers, newletters), salad bar during lunch, healthy eating promotional activities (posters, lunch contests), school health committees, reduced hours of operation in the school store Specialized expertise: Three-hour development sessions for physical education staff, 11 hours of training for Child Nutrition Service staff Resources needed: Incentives for physical education equipment, kitchen equipment, materials for newsletters, posters and flyers, educational packet for store managers and other school staff, material for staff training Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in Boys No Impact for Overweight/obesity in Girls High Impact for Physical Activity in Study Population, Boys, and Girls Effectiveness = Effective for overweight/obesity in boys and not effective for overweight/ obesity in girls, effective for physical activity in the study population, boys, and girls Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** NUTRITION: 1. No significant change in fat intake was observed. Effect sizes indicated a near null effect for total (d=0.03) and saturated fat (d=0.13).	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Caballero, Clay (2003); Himes, Ring (2003); Story, Snyder (2003); Cunningham-Sabo, Snyder (2003); Steckler, Ethelbah (2003); Going, Thompson (2003); Stevens, Story (2003); Helitzer, Davis (1999); Snyder, Anliker (1999); Teufel, Perry (1999); Davis, Going (1999); Gittelsohn, Evans (1999); Davis, Clay (2003); Davis, Hunsberger (1999); Stone, Norman (2003); Gittelsohn, Merkle (2003) New Mexico, Arizona, Minnesota, South Dakota	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All students at the 21 intervention schools were potentially exposed to the intervention. **High-Risk Population** High Lower-income, 100% Native American/ American Indian 8-11 year olds,On average, 90% of children received free reduced price lunch. (intervention)	**Representative** High All students at the 21 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component Pathways - Physical activity component: Minimum of three 30 min sessions per week of moderate to vigorous physical activity (MVPA); daily recess for 15 minutes 1-2 days/week; 2-10 minute classroom exercise breaks (physical activity program based on Sports, Play, and Active Recreation for Kids [SPARK] program with addition of an American Indian games module) MULTI-COMPONENT: Healthy eating policies for school breakfast & lunch to: 1. Reduce % of energy from fat to <30% while maintaining recommended levels of calories and key nutrients (665 kcal for lunch, 500 kcal for breakfast) 2. Reduce the % of energy from saturated fat to <10% 3. Limit fat served for lunch to 22g and to 17g for breakfast 4. Reflect USDA regulations of protein, vitamin A and C, calcium and iron as one-third of the daily recommended intakes COMPLEX: 1. Class curriculum component: two 45 min lessons promoting healthy eating and active living weekly (12 weeks for 3rd & 4th grade, and 8 weeks for 5th grade) 2. Parental component: Family action packs (including snack packs with low fat foods); family events at school **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, additional sessions (min. 3) of physical activity per week, daily recess, classroom physical activity breaks, classroom curriculum (health eating, active living), family action packs, family events at school Specialized expertise: Annual teacher training, physical education teacher training (1.5 days before each fall and spring semester) by licensed SPARK instructors or Pathways staff; school food service staff training (2 hour trainings, twice per year) by trained Pathways staff Resources needed: Educational materials for curriculum, incentives for food service staff, pathways Behavioral Guidelines providing skill building techniques for food service staff, funds to support changes in food environment, materials for family events, instructors manual for teachers, materials to implement curriculum (e.g., overhead transparencies, audio tapes, posters, incentives), funds/ personnel to conduct trainings, training manual to guide teacher training Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**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 Lower-income, Native American Students No Impact for Physical Activity in Lower-income, Native American Students Effectiveness = Not effective for overweight/ obesity and physical activity in Lower-income, Native American students Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** NUTRITION: 1. The 24-hour recall showed a significantly lower total daily energy intake (1892 compared with 2157 kcal/d, p<0.003) and percent of energy from total fat (31.1% compared to 33.6%, p<0.001) in the intervention group compared to the control group. 2. Mean differences between intervention and control nutrient intakes for lunch observations did not reach statistical significance. As percent of energy, however, total fat intake decreased by 3.6%, saturated fat decreased by 2.1% and total carbohydrates increased by 3.7% compared with control children. (p<0.05 for all changes). 3. Based on 24-hour recalls, intervention children compared to control children reported significantly less intake for absolute amounts of energy (-263 kcal), protein (-9.5 g), total fat (-15.1 g), saturated fat (-6.0 g), and polyunsaturated fat (-2.3 g), and as a percent of calories, total fat (-2.5%) and saturated fat (-1.1%), p<0.05 for all. While meals eaten in school contribute substantially to the observed all-day intakes, these 24-hour recall data support a conclusion of significant overall dietary impact for the Pathways intervention.	KNOWLEDGE/AWARENESS: 1. The mean scores on the knowledge, attitude and behaviors questionnaire for the intervention group were significantly higher than the scores for the control group. These results suggest that the Pathways curriculum was effective in promoting positive changes in knowledge related to healthful eating and physical activity. There was also a significant retention of knowledge over the 3 year period for the intervention group.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author McKenzie, Sallis (1993); Sallis, McKenzie (1993); Sallis, McKenzie (1997); McKenzie, Sallis (1997); Sallis, McKenzie (1999); Marcoux, Sallis (1999); Douda, James (2005); McKenzie, Sallis (2009) California	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = elementary school children 4th grade students at the intervention schools were exposed to the intervention. The same children were also exposed to the intervention as 5th graders for the second year of the intervention. **High-Risk Population** Low 9-11 year olds (target population) 82% European American, 12% Asian/ Pacific Islander, 4% Latino and 2% African American (evaluation sample, which is similar to the community)	**Representative** Low All 4th grade students were exposed to the intervention, rather than all elementary school. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** Low High-risk population = Low Representativeness = Low	**Intervention Components** Complex Sports, Play, and Active Recreation for Kids (SPARK) - school physical education (PE) policy to increase intensity, duration and complexity of physical activity during PE classes through three 30-minute PE classes per week. COMPLEX: 1. Self-management curricula - weekly 30-min classes promoting physical activity outside of school by teaching skills related to self-management, self-monitoring, self-evaluation and self-reinforcement. 2. Self-management workshops – 32 lessons teaching a skill or concept related to physical activity outside school and maintenance of activity habits. 3. Parent participation through homework, newsletters and weekly goal sheets **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities : school physical education changes, self-management curricula (weekly 30-min classes), self-management workshops (32 lessons), parent homework and weekly goal sheets, parent newsletters Specialize expertise : Physical education (PE) specialists to teach physical education, in-service training from the PE specialists including 23 hours in year one and 15 hours in year 2, additional training and assistance from PE specialists to the teachers through bi-weekly to bimonthly visits. Resources needed : PE equipment, daily lesson plans, monthly parent newsletter, weekly goal sheets, incentives (pencils, sports water bottles, stickers, etc.) Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population No Impact for Overweight/ obesity in Boys No Impact for Overweight/ obesity in Girls Low Impact for Physical Activity in the Study Population Low Impact for Physical Activity in Boys Low Impact for Physical Activity in Girls Effectiveness = Not effectve for overweight/ obesity in the study population, boys, and girls and effective for physical activity in study population, boys, and girls Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = Low Implementation complexity = High **Sustainability** No Due to lack of funding, PE specialists were no longer able to be employed by the schools. Classroom teachers resumed the responsibility for teaching their own physical education classes.	Not Reported	ACADEMIC ACHIEVEMENT: 1. For cohort 1 (n=330), there were no effects of the SPARK intervention on the Basic Battery or Math score. On the language score, the decline in percentile ranking was significantly less in the teacher-led group compared to the control group [F(2)=3.37, p=0.04]. On the Reading score, students in the specialist-led group increased in percentile ranking, while the control students declined [F(2)=4.29, p=0.02]. 2.For cohort 2 (n=424), students in the teacher-led course declined less on the Basic Battery and Reading scores than those in the other two conditions [F(2)=7.23, p=0.001; F(2)=8.36, p=0.001 respectively]. There was a negative effect for Language score, where declines in the specialist-led group were significantly greater than the other 2 conditions [F(2)=5.8, p=0.004]. POLICY CHANGE: 1. Students in the control condition spent significantly fewer minutes per week in physical education classes (38.0 min, 95% CI: 27.9 – 48.1) compared to teacher-led (64.6 min, 95% CI: 59.0 – 70.2) and specialist-led conditions (79.7 min, 95% CI: 76.3 – 83.1), p<0.001.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Pate, Ward (2005) & Ward, Saunders (2006) South Carolina	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = high school girls Only 9th grade girls who attended the intervention schools were exposed to the intervention. **High-Risk Population** Not reported 13-15 year old girls (target population) 52.1% African American (intervention-evaluation) 47.5% African American (control-evalution) The racial/ethnic breakdown of the evaluation sample was comparable to the population of the participating schools.	**Representative** Low 9th grade girls attending the intervention were exposed, rather than all high school girls. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Low	**Intervention Components** Complex- Lifestyle Education for Activity Program (LEAP) - school physical education policy to increase the amount of time girls spend in moderate to vigorous activity to 50% or more of physical education time. MULTI-COMPONENT: 1. LEAP teams focus on instituting school-wide policies and practices to encourage physical activity (e.g., use of school space and resources outside the school day, opportunities for increased physical activity) COMPLEX: 1. Health education including 15 lessons on physical activity behavioral skills 2. Physical activity promotion by school nurses (e.g., posters, flyers, class presentations) 3. Physical activity opportunities for staff to promote active role modeling 4. 'Communities in motion' program linking girls to physical activity opportunities in the community **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School physical education changes, health education, LEAP teams instituting school-wide policies and practices, physical activity promotional activities, staff role-modeling, 'communities in motion' program linking girls to physical activity opportunities in the community Specialized expertise: Two health and physical education professionals to develop and supervise the intervention Resources needed: Incentives for participation (gifts valued at <$10), LEAP Resource Manual, promotional materials (e.g., signs, bulletin boards, posters, fliers), school newspaper, personnel (health and physical education professionals) Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/obesity in Girls Low Impact for Physical Activity in Girls Effectiveness = Not effective for overweight/ obesity in girls and effective for physical activity in girls Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = Low Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Neumark-Sztainer, Story (2003) Minnesota	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All girls at the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) Female, 14-18 year olds (target population) 41.9% White, 28.6% African American, 21.1% Asian American, 4.4% Hispanic, 1.0% Native American, 3.0% mixed/other (evaluation sample)	**Representative** High All girls at the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex The New Moves Program (NMP) – school policy to increase physical activity among girls by offering physical activity (PA) four times a week. COMPLEX: 1. Field trips and free passes to local community centers, recreation facilities, and parks. 2. Nutrition education sessions (offered every other week) focused on skill building and increasing self-efficacy to implement long-term changes in eating behaviors. 3. Social support sessions (offered every other week) focused on enhancing self-image and increasing awareness of weight-related media messages. 4. Postcards containing information related to physical activity, social support or nutrition mailed home every 2-3 weeks throughout the intervention and maintenance periods. 5. Weekly lunch meetings with healthy food (maintenance period only) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities - School physical education changes (additional physical activity offerings), field trips, free passes to local recreational areas, nutrition education sessions, social support sessions, postcards, weekly lunch meetings Specialized expertise - New Moves intervention coordinator, registered dietician to teach the nutrition sessions, and one full day of training for school staff Resources needed - Recruitment flyers and posters, program manuals, guest fitness instructors for the physical activity classes, funds for field trips, free passes to community recreation facilities, healthy food for weekly lunch meetings, materials for teacher training, personnel (New Moves intervention coordinator, registered dietician) Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/obesity in Girls Low Impact for Physical Activity in Girls Effectiveness = Not effective for overweight/ obesity in girls, somewhat effective for physical activity in girls Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes A one year follow-up found that all intervention schools continued to offer an all-girls physical education section, invite guest instructors to offer special classes to the girls and integrate nutrition and social support components into the physical education classes.	Not Reported	1. High percentages of girls reported that the program was helpful in increasing physical activity levels (77%), increasing the number of healthy food choices made (81%) and improving self-esteem (69%).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Bayne-Smith, Fardy (2004) New York	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = Urban, multi-ethnic teenage girls Sample of 9th through 12th grade classes were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) Female, Urban, 14-19 year olds (target population) 10% White, 46% African American, 29% Hispanic, 15% Asian (evaluation sample)	**Representative** High All children in the 12 intervention schools were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Physical Activity and Teenage Health (PATH) intervention - 30-minute physical education classes conducted 5 days per week for 12 weeks including: 1. 5-10 minute lecture and discussion 2. 20-25 minutes of vigorous physical activity (resistance exercise or aerobic exercise). COMPLEX: 1. PATH student manuals including information on cardiovascular health, exercise, nutrition and smoking. 2. Homework assignments designed to enhance or clarify lecture material. 3. PATH physical education teacher manuals including guidance for teaching the program curriculum and assessing outcomes. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional physical education classes, student manuals, homework assignments, physical education teacher manuals Specialized expertise: Not reported Resources needed: PATH student and teacher manuals, physical education teachers, equipment for PATH activities Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** Low Impact for Overweight/obesity in the Study Population Effectiveness = Somewhat effective for overweight/ obesity for the study population Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes The program has been introduced in approximately 50 middle and high schools.	Not Reported	HEALTH KNOWLEDGE: 1. Significant differences in health knowledge and eating breakfast were observed between PATH and control students (X^2= 14.8, df=1, p<0.05). 2.Analysis of other lifestyle measures revealed no significant differences between mean change scores for self-perception of health, out-of-school physical activity, and dietary habits between PATH and control students. OTHER HEALTH RESULTS: 1. Mean changes in PATH versus control physiological measures were significant for systolic blood pressure (PATH: -5.3; control: -3.0; p<0.05) and diastolic blood pressure (PATH: -3.2; control: +0.2; p<0.001). 2.Mean differences in total serum cholesterol and estimated maximum oxygen uptake were not significant between PATH and control students.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Hopper, Munoz (2005) California	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = elementary school children Only third grade students from 9 elementary school classrooms were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 8-9 year olds, Rural (target population) 83% Caucasian, 5% Native American, 5% Asian, 5% Hispanic and 2% African American (evaluation sample)	**Representative** Low Only 3rd graders from 9 elementary schools were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Low	**Intervention Components** Complex School policy increasing physical education (PE) instruction to three 30-minute lessons per week, emphasizing physical activity and fitness objectives specified in Healthy People 2000. <u>COMPLEX:</u> 1. Orientation event: Overview of program for parents and students 2. Home component: Families were asked to set activity goals. Students took home a packet including exercise and nutrition activities to be completed during the week. Families kept a family fitness scorecard and students received stickers and points for returning the scorecard to class. 3. Nutrition education component: Teacher-led classroom nutrition education for two 30-minute lessons per week. Included hands-on activities, games, group discussion, and role-playing designed to encourage the use of healthy foods. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional physical activity sessions, teacher-led classroom nutrition education, orientation event, family homework, family fitness scorecard Specialized expertise: Training for teachers (10 hours) and on-going assistance from the research team Resources needed: Teachers, materials for teacher training, resources for parent orientation, family fitness scorecards, incentives (t-shirts, stickers, door prizes), resources for physical education and nutrition lessons Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Physical Activity in the Study Population Low Impact for Nutrition in the Study Population Effectiveness = Not effective for physical activity in the study population and somewhat effective for healthy eating in the study population Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	<u>KNOWLEDGE:</u> 1. At post-intervention, intervention schools scored significantly higher (mean=15.41, SD=1.10) than control schools (mean=13.43, SD=0.55) on mean knowledge scores [$F(1,4)= 7.85$, $p<0.05$, $n2= 0.66$]. Note: degrees of freedom for the school mean comparisons were low.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Donnelly, Greene (2009); Gibson, Smith (2008); DuBose, Mayo (2008); Honas, Washburn (2008) Kansas	**Participation/ Potential Exposure** Participation = High (100%) Exposure = High All students in grades 2-5 in the intervention schools (n=14) participated in PAAC as it was adopted as a curriculum. **High-Risk Population** Not Reported (for intervention population) 7-11 year olds, Lower-income (target population) 77.4% Caucasian, 6.2% African American, 10.1% Hispanic, 1.6% Native American, 1.2% Asian, and 3.6% multi-ethnic. 43% of participants qualified for free or reduced price lunch (evaluation sample)	**Representative** High All students in grades 2-5 in 14 schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Physical Activity Across the Curriculum (PAAC) – School policy integrating moderate-intensity physical activity (PA) into regular classroom activities intermittently throughout the school day for grades 2-5. COMPLEX: 1. Teachers provided with TAKE10! material kits (lesson ideas worksheets, colorful posters, stickers) 2. Notebook of physically active lesson examples that could be taught as part of the regular school curriculum (integrated within mathematics, science, language arts and social studies) provided to teachers 3. $2,000 incentive to participate **Feasibility** Intervention feasibility = High Policy feasibility = High Intervention activities: Changes to the physical education curriculum, education materials, teacher's manual with physically active lesson plans Specialized expertise: Teacher in-service once a year Resources needed: Compensation for teacher trainings ($150 for yr 1 and $100 for yr 2-3), $2,000 incentive per school, TAKE10! material kits, sample lesson notebooks Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/obesity in the Study Population High Impact for Physical Activity in the Study Population Effectiveness = Effective for overweight/obesity and physical activity for the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes PAAC has been sustained by teachers without any further contact by the investigators. Teachers were surveyed 9 months after completion of PAAC. Approximately 95% of teachers indicated that they were using PAAC lessons one day/wk or more. About 55% of teachers indicated that they were using PAAC 2 to 4 days/wk, 35% were using PAAC on most days or every day, and only 5% were not using PAAC lessons.	Not Reported	ACADEMIC ACHIEVEMENT: 1. Significant improvements in academic achievement from baseline to 3 years were observed in the PAAC compared to the control schools for composite, reading, math and spelling scores (data not reported).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Mahar, Murphy (2006) North Carolina	**Participation/ Potential Exposure** Participation = Not reported Exposure = High Target population = elementary school-aged children A sample of the kindergarten through 4th grade children were exposed to the intervention (2 out of 3 classes per grade). **High-Risk Population** Not Reported (for intervention population) 5-10 year olds (target population)	**Representative** Not Reported (for intervention population) 5-10 year olds (target population) **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex School policy incorporating short classroom-based physical activities called Energizers (10 minutes) into grade-appropriate learning materials. COMPLEX: 1. Energizers booklet of activities for teachers. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Short activity breaks (Energizers) incorporated into classrooms, booklet of activities for teachers Specialized expertise: 45 minute training session for teachers Resources needed: Resources for teacher training, energizers booklet, classroom teachers Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** Low Impact for Physical Activity for the Study Population Effectiveness = Somewhat effective for physical activity for the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High Sustainability Not Reported	Not Reported	TASK-RELATED BEHAVIORS: 1. The improvement in on-task behavior of 8% (from 70.9±15.3 to 79.2±11.4) between the pre-Energizers and post-Energizers observations was statistically significant (P<0.017). The mean increase in on-task behavior from pre-Energizers to post-Energizers was moderate (effect size= 0.60). 2.Among the least on-task students at baseline, the increase in mean percentage of on-task behavior from the pre-Energizers to the post-Energizers observations during the intervention period was large (effect size= 2.20) and statistically significant (P< 0.05). The mean percentage of on-task behavior increased by about 20% after these students had participated in an Energizers activity.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author McMurray, Harrell (2002) North Carolina	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All students in the 5 intervention schools were exposed to the intervention. **High-Risk Population** Not Applicable Not Reported (for intervention population) 11-14 years olds, Rural (target population) 64% White, 24.4% African-American, 11.6% other ethnicities (evaluation sample)	**Representative** High All students in the 5 middle schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex School policy implementing 30 minutes of aerobic exercise for 3 days a week in physical education classes. <u>COMPLEX:</u> 1. Knowledge program consisting of information on nutrition and smoking. 2. Materials were presented in two physical education class periods per week. (Note: one group received both components, one received only exercise and one received only education) **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional aerobic exercise in physical education classes Specialized expertise: Specialist in middle-school physical and health education and state-certified health educator to develop the exercise and education program Resources needed: Specialist in middle-school physical and health education to develop exercise program, state-certified health educator to develop curriculum, physical education teachers to deliver exercise and education program, physical education textbooks Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** Low Impact for Overweight/obesity in the Study Population Effectiveness = Somewhat effective for overweight/ obesity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. The small increase in aerobic power (VO2max) of the exercise and education group (0.8 ± 0.4 mL/kg/min) was significantly greater than in the education only group (-1.1 ± 0.4 mL/kg/ min), p=0.0001. 2.Changes in systolic blood pressure were significantly different between groups (education only group mean = -1.1±0.6 mmHg, exercise only group mean = -2.8±0.5 mmHg, exercise and education group mean = -2.0±0.6 mmHg, control mean = +1.8±0.6; ANCOVA, p=0.0001). 3. Changes in diastolic blood pressure were significantly different between groups (education only group mean = +0.1±0.6 mmHg, exercise only group mean = -4.8±0.6 mmHg, exercise and education group mean = -0.5±0.6 mmHg, control mean = +1.4±0.7; ANCOVA, p=0.0001). 4. The increases in systolic and diastolic blood pressure for the control group were significantly different from all 3 of the intervention groups (p<0.001). The decrease in diastolic blood pressure for the exercise only group was significantly different from that of the education only group (p=0.0001).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Luepker, Perry (1996); Luepker, Perry (1998); McKenzie, Nader (1996); McKenzie, Stone (2001); Webber, Osganian (1996); Dwyer, Hewes (1996); Osganian, Ebzery (1996); Lytle, Stone (1996); Perry, Lytle (1998); Nader, Sellers (1996); Perry, Sellers (1997); Nicklas, Dwyer (1996); Nicklas, Stone (1994); Nader, Stone (1999); Hoelscher, Feldman (2004); Osganian, Hoelscher (2003) California, Louisiana, Texas, and Minnesota	**Participation/ Potential Exposure** Participation = High (100%) 100% of schools participated in CATCH during the entire intervention period. Exposure = High All students in CATCH schools **High-Risk Population** Not Reported (for intervention population) 5-10 year olds 69.2% White, 13.3% African-American, 13.8% Hispanic, 3.7% other (evaluation sample)	**Representative** High All students were exposed. **Potential Population Reach** High Participation = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component Child and Adolescent Trial for Cardiovascular Health (CATCH)-School physical activity policies to: 1. CATCH PE component: Distribution of PE materials (PE Guidebook, Activity Box, and 3 videotapes); teachers encouraged to add their own activities that met CATCH objectives <u>MULTI-COMPONENT:</u> 1. Increase use of fresh, frozen, canned, or dried fruit 2. Increase use of fresh, frozen, or unsalted canned vegetables and salads 3. Reduce total fat to no more than 11g, saturated fat to 3.5g, and sodium to 600-1,000 mg per school meal 4. Maintain total energy at 338 calories or more 5. Maintain other essential nutrient levels by meeting minimum requirements specified by the USDA <u>COMPLEX:</u> 1. Eat Smart component: Tools and materials provided to foodservice staff (Eat Smart School Nutrition Program Guide, Eat Smart Recipe File box, Vendor Product Handbook of products, Eat Smart Newsline), promotional events and materials(e.g., food prep demos, cafeteria tours, posters) 2. Family component: 4 home-based curricula, rewards for completed and returned lessons, 2 Family Fun Nights, (grades 3-4: dance performances by students, food booths with healthy snacks, taste testings, distribution of recipes, and games). 3. Class curriculum component: grade appropriate curricula consisting of 30-40 minute lessons (eating habits, physical activity, and cigarette smoking) for 5, 12, and 8 weeks in grades 3, 4, and 5, respectively **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu change, school physical education changes, classroom curriculum, family homework, family fun nights, healthy eating tools for school foodservice staff, healthy eating promotional events and materials Specialized expertise: Training for food service personnel (1 day, along with booster trainings throughout the year), PE teachers and specialists (1 to 1.5 days at the beginning of each school year; 4th and 5th grade PE teachers received a half-day booster training at midyear) and classroom teachers (1 to 1.5 days of training yearly) Resources needed: Food service and school staff personnel, resources for trainings, refrigerator tip sheets and magnets, rewards for home component (pencils, memo pads, certificates), score cards for home curriculum, resources for family fun nights (food booths with healthy snacks, recipes, games, etc.), CATCH PE Guidebook, activity Box for PE, PE videotapes, Eat Smart School Nutrition Program Guide, Eat Smart Recipe File box, Vendor Product Handbook, Eat Smart Newsline (newsletter for food service managers), resources for Eat Smart activities and promotional materials (food prep demos, cafeteria tours, posters, table tents, etc.), small stipend for those attending training sessions. Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Overweight/obesity in the Study Population High Impact for Physical Activity in Study Population Effectiveness = Neutral for overweight/obesity in the study population and effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness = Not reported for high-risk populations Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes There were higher levels of institutionalization in the former intervention compared to former control schools. The mean CATCH institutionalization score for former intervention schools versus former comparison schools was significantly different (0.75 ± 3.27 vs. -2.10 ± 2.18, $P<0.001$), indicating that former intervention schools maintained more of the original CATCH components compared to former control schools.	**School Food and Beverage Policies** <u>NUTRITION:</u> 1. Fat intake was significantly reduced among intervention children at follow-up (32.7% to 30.3% of energy consumed) compared with those in control schools (32.6% to 32.3%), $p<0.01$. Much of this difference came from the intake of saturated fat falling in the intervention schools (from 12.7% to 11.4% of energy) and changing little in the control schools (from 12.5% to 12.1%), $p<0.01$. 2. Dietary cholesterol was significantly reduced among children in the intervention group (223 mg to 206 mg) compared with controls (218 mg to 225 mg), $p<0.05$. 3. Analyses of variance revealed no differences in fruit and vegetable (F&V) consumption at follow-up due to site, sex, race, sex by race, or condition by race by sex. 4. Total daily intakes of vitamin B6, folacin, magnesium and sodium increased at follow-up in the intervention schools and decreased in control schools (data not shown).	<u>PHYSIOLOGICAL RESPONSE:</u> 1. Systolic blood pressure levels were 4.9 mm Hg higher at follow-up (109.9 mm Hg) than at baseline (105.0 mm Hg). There was a statistically significant site by intervention group interaction ($p<0.005$). In Minnesota, children in the intervention schools had levels 1.5 mm Hg higher than control schools, while in Louisiana and Texas, children in intervention schools had levels 1.1 and 0.59 mm Hg lower, respectively. In California no differences in levels between the intervention and control schools were seen. No differences in levels due to ethnicity and gender were noted. 2.For diastolic blood pressure, the increase was 2.3 mm Hg from baseline (54.5 mm Hg) to follow-up (55.7 mm Hg). A site by intervention group interaction ($p=0.04$) was noted with children in intervention schools having higher levels that those in control schools in Minnesota (1.2 mm Hg) and California (0.6 mm Hg), but the reverse effect was noted in Louisiana (0.2 mm Hg lower) and Texas (0.2 mm Hg lower).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Heath, Coleman (2002); Heath, Coleman (2003); Coleman, Tiller (2005); Brown, Perez (2007) Texas and New Mexico	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children in the intervention schools were exposed to the intervention at some point between 1997 and 2000 (schools added at different time points). **High-Risk Population** High Hispanic/Latino, Lower- income, 5-10 year olds Children in participating schools were 75%-98% of Hispanic heritage.	**Representative** High All children in the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component CATCH El Paso Study CATCH PE component: Improved school physical education (PE) curriculum, increased physical activity during PE classes; improved PE equipment. MULTI-COMPONENT: *CATCH Eat Smart component: Modification of school meals to meet the following guidelines:* 1. <30% of total calories from fat 2. 100-600 mg sodium 3. <10% of total calories from saturated fat COMPLEX: 1. CATCH HOME TEAM component: home/ family activities 2. Classroom curriculum component: increased the number of health lessons in curriculum **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School meal modification, school physical education changes, home/family activities, classroom curriculum (health education) Specialized expertise: Training for teachers and food service staff (frequency and duration of trainings not reported) Resources needed: Incentives ($1000 for control and $8500 total for intervention schools), CATCH PE guidebook, PE activity box, curriculum materials, Eat Smart manual, PE equipment, healthy foods Costs: The Cost-effectiveness Ratio (CER) was $900, much lower than the $30,000 maximum generally accepted as still cost-effective. The Net Benefit (NB) was $68,125, much higher than the $0 minimum generally accepted as net beneficial. **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in the Study Population High Impact for Physical Activity in the Study Population Effectiveness = Effective for physical activity and overweight/obesity in Ithe study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** High Impact for Overweight/obesity in Lower-income Hispanic Children High Impact for Physical Activity in Lower-income Hispanic Children Effectiveness for high-risk populations = Effective for physical activity and overweight/obesity in Lower-income Hispanic children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Yes Paso Del Norte Foundation awarded another $4.2 million over 4 years for El Paso CATCH beginning in Fall 2000 (after 3 years of program evaluation). Estimated sample size by fall 2002 was 108 schools and 50,000 children from New Mexico to West Texas.	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Harris, Paine-Andrews (1997); Harris, Richter (1997) Kansas	**Participation/ Potential Exposure** Participation = Not Reported Exposure = Low All 4th graders in one Salinas school and all 5th graders in one Dighton school received the entire intervention. **High-Risk Population** Not Reported (for intervention population) 9-11 year olds, Urban and rural (target population) Salinas has a population of 42,300 urban and rural. Dighton has a population of 1,400.	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Exposure = High Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Multi-component Kansas LEAN School Intervention Project - Physical fitness stations in classrooms (workbooks & fitness activities), noncompetitive incentive system based on students' goals, lesson plans for physical education teachers to enhance variety/intensity of physical activity Components varied slightly between communities. <u>MULTI-COMPONENT:</u> 1. School policy to reduce dietary fat and maintain adequate calories and food acceptability by changing food prep techniques, recipe ingredients, products from vendors and menu combinations to reduce % calories from fat. <u>COMPLEX:</u> 1. Nutrition education component: American Cancer Society's "Change the Course (CTC)" health units, volunteer role models, field trips, teacher incentives for implementation 2. Community component: On-site coordinators (20-30 h/wk) recruited parents, teachers, business leaders and other community members to for community partnerships **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, school physical education curriculum changes, nutrition education, community partnerships Specialized expertise: Dieticians working as on-site coordinators 20-30 hrs/week; training for teachers, food service staff and physical education instructors (one-on-one and workshops) Resources needed: Dietician on-site coordinators, funds for field trips, new menu ingredients, "Change the Course" curriculum, incentives for teachers and students who achieve personal PA goals Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Effective for physical activity for the study population, girls and boys Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Applicable Pilot study	Not Reported	1. In Dighton, intervention students' performance on the Upper Elementary Assessment increased from pretest (71%) to post-test (84%), and the increase was maintained at a 1-year follow-up (83%). Changes from pretest to posttest were significant ($t[33] = -6.64$, $p<0.0001$; $d= 6.9$). 2. In Salinas, 4th grade students scored higher at posttest on the Lower Elementary Assessment (82%) than students who did not receive the enhanced nutrition education (74% and 72%). The difference between these scores was significant ($F[2,133] = 21.179$, $p<0.0001$; $R2=0.2328$).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Cotts, Goldberg (2008); Cotts, Durussel-Weston (2007) Michigan	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All sixth graders (n= 711 eligible children) received the educational curriculum of Project Healthy Schools. All students in the middle schools were exposed to the school lunch modifications. **High-Risk Population** Not Reported (for intervention population) 11-13 year olds (target population) 60% White, 8% Black, 29% Asian, 5% Hispanic, 7.2% other racial group or unreported (evaluation sample)	**Representative** High All sixth graders were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component Project Healthy Schools Program - physical activity offered 150 minutes per week MULTI-COMPONENT: 1. Modifications in the school cafeteria in cooperation with the school's food service vendor, including: addition of a salad bar (fresh vegetable choices) and healthy snack items, replacement of fried chips with lower-fat baked chips and replacement of sugary soft drinks with bottled water in the cafeteria and vending machines. COMPLEX: 1. Promotional component: Student assemblies throughout the year promoting healthy lifestyle habits. 2. Education component: Ten 20 minute sessions focused on increasing healthy eating, physical activity, and decreasing screen time. 3. Classroom awards given for the practice of healthy lifestyle habits. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Addition of a salad bar, school vending machine changes, healthy eating and physical activity education sessions, student assemblies, classroom awards Specialized expertise: Project Healthy Schools educators to teach the healthy eating and physical activity sessions Resources needed: Curriculum materials, food for salad bars, healthy snacks and bottled water to replace unhealthy snacks, personnel to teach curriculum (if needed), funds for school environment changes, resources for assemblies, classroom awards Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population High Impact for Physical Activity in the Study Population Effectiveness = Not effective for overweight/obesity in the study population, effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** NUTRITION: 1. No significant change was observed between baseline and follow-up in the reported intake of high-fat and fried protein foods. 2. At follow-up, reported intake of fruits and vegetables was higher than baseline with 65% (vs 55%) of students reporting consumption of 3 or more servings of fruits and vegetables each day, 16% (vs. 25%) reporting 2 servings for a given day and 7% reporting no fruit and vegetable intake (p=0.053). 3. There was no statistically significant difference in reported daily intake of high-sugar beverages between baseline and follow-up (p=0.311).	1. The average diastolic blood pressure was 65.6 ± 8.6 mmHG before program participation and 62.3 ± 8.9 mmHG at follow-up (p=0.014). No significant change in systolic blood pressure. 2. Mean total cholesterol level decreased from 169 ± 26 to 154 ± 27 mg/dl, for a mean change of 14.4 mg/dl (p<0.0001). 3. Paired t-tests showed a difference in LDL cholesterol levels from baseline to follow-up of -3.4 (p=0.01) and in HDL cholesterol levels of -5.4 (p<0.0001). 4. The average glucose value decreased from 96 ± 13 to 93 ± 13 mm/dl (p=0.01).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Young, Phillips (2006) Maryland	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All ninth-grade girls (target population) enrolled in the required physical education classes were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 83% African American (evaluation sample)	**Representative** Low Only girls enrolled in the physical education class were exposed. **Potential Population Reach** Low Exposure = High Representativeness = Low **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Low	**Intervention Components** Complex School policy to maximize physical activity for girls in physical education classes including: 1. Teaching units that were active in nature (e.g., soccer instead of softball) 2. Skills training in small group activities 3. Games in small groups COMPLEX: 1. Health education including goal setting, problem solving, communication skills, reinforcement of goal achievement and learning from relevant role models. 2. Family workshop 3. Monthly newsletter 4. Adult-child homework assignments **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Changes to the physical education curriculum, health education sessions, family workshop, monthly newsletter, adult-child homework assignments Specialized expertise: Not reported Resources needed; Teacher for physical education classes, recruitment materials, newsletters, videotapes for family workshop, homework assignments Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** Low Impact for Overweight/ obesity in Girls Low Impact for Physical Activity in Girls Effectiveness = Effective for physical activity and overweight/ obesity in girls (study population) Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Applicable	Not Reported	1. Blood pressure, total cholesterol or lipoprotein level did not differ from baseline to follow-up by treatment status. 2.There was no significant difference between the intervention and control group for mean daily energy expenditure (p=0.93), moderate-intensity energy expenditure (p=0.77), or hard to very hard energy expenditure (p=0.69). 3. There were significant improvements from baseline to follow-up in submaximal heart rate for the intervention (-7.1; p< 0.001) and control group (-7.4; p< 0.001).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Shaw-Perry, Horner (2007) Texas	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All of the 269 fourth-graders enrolled in the 6 elementary schools were exposed to the intervention. **High-Risk Population** High African-American children in the San Antonio Independent School District (SAISD) (target population) 90% of the 4th graders from the six elementary schools were from economically disadvantaged households and 60% were African- American (intervention population) Data is reported on 68 African-American children (evaluation sample)	**Representative** High All fourth graders in 6 elementary schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component NEEMA - Health and physical education classes 5 days a week for 45 minutes/day, including four days of physical activities and one day of health education. MULTI-COMPONENT: *School Food Service Program:* 1. Weekly lessons (15 minutes) for food service staff to improve nutrition knowledge 2. Weekly lunch visits to encourage students to eat healthier foods. COMPLEX: 1. Health Club: Meetings held once a week on a weekday for 45 minutes during school or for one hour after school that promoted leisure-time physical activity (e.g., aerobics, dancing) 2. Family Fun Fair: Meetings held in conjunction with Parent Teacher Association meetings that promoted healthy choices for the whole family (e.g., cooking demonstrations, family games, health screenings) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Changes to physical education curriculum, weekly nutrition lessons for food service staff, weekly lunch visits, student health club, family fun fair Specialized expertise: Research team conducted weekly lessons for food service staff Resources needed: School personnel (teachers, food staff), instructor's manual for physical education classes and health club, student workbooks, parent manuals and handouts for the fun fairs, instructor's manual and workbooks for the food service program Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** Low Impact for Overweight/obesity in the Study Population Low Impact for Physical Activity in the Study Population Effectiveness = Somewhat effective for overweight/obesity and physical activity in lthe study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** Low Impact for Overweight/obesity in Lower-Income, African-American Children Low Impact for Physical Activity in Lower-Income, African-American Children Effectiveness for high-risk populations = Somewhat effective for overweight/ obesity and physical activity in lower-income, African-American children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. Fasting capillary glucose decreased from 89.17 ± 10.05 units to 83.50 ± 11.26 units between baseline and follow-up (paired sample t=3.73, df=57, p<0.001). 2. Among students with complete data, the number who screened positive for pre-diabetes decreased from 16% at baseline to 3% at follow-up.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Stevens, Murray (2005); Young, Johnson (2006); Gittlesohn, Steckler (2006); Webber, Catellier (2008); Elder, Shuler (2008), Young, Steckler (2008) United States	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All 6th through 8th grade students (girls and boys) at the 36 intervention schools received the intervention. **High-Risk Population** Not Reported (for intervention population) Female 11-14 year olds 53.6% racial/ ethnic populations (evaluation sample)	**Representative** High All students in grades 6-8 at the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Trial of Activity in Adolescent Girls (TAAG) – school policy to increase physical activity in girls by requiring at least 50% of physical education class time to be spent in moderate to vigorous physical activity (MVPA). COMPLEX: 1. Health Education (6 lessons) for 7th and 8th graders that promoted development of behavioral skills associated with physical activity 2. Community-led physical activity programs and events before and after school (e.g., step aerobics, open gym, basketball camp) 3. Media and promotional events to promote awareness of and participation in activities. Passport promotion activity for girls where they received stamps for completing physical activity. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Changes to the physical education curriculum, health education, community-led physical activity programs, media and promotional events Specialized expertise: Workshops for teachers to conduct the physical education lessons (frequency and duration not reported), Program Champions to sustain the intervention Resources needed: Recruitment materials (e.g., postage, permission-to-contact post cards), personnel (teachers and Program Champions), physical education instructional materials, health and physical education lessons, incentives (gift certificates, food for parties), promotional materials (e.g., pedometer, passport, posters, flyers), stipend for TAAG PCs, meeting space for activities and programs Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in Girls High Impact for Physical Activity in Girls Effectiveness = Not effective for overweight/ obesity for girls, effective for physical activity for girls Potential population reach = HIgh Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Pangrazi, Beighle (2003) Arizona	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in grades 4-6 in the PLAY schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 9-12 year olds (target population)	**Representative** High All children from the 19 PLAY schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Simple Promoting Lifestyle Activity for Youth (PLAY) –school policy providing children with 15 minutes of extra physical activity (PA) in school each day **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Additional 15 minutes of physical activity each school day, encouragement from teachers Specialized expertise: County health coordinators to assist teachers, training for teachers on PLAY curriculum (frequency and duration not reported) Resources needed: Pedometers, PLAY teaching materials, county health coordinators to assist teachers, materials for teacher training Costs: Not reported **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population Low Impact for Physical Activity in the Study Population Effectiveness = Not effective for overweight/obesity for study population, somewhat effective for physical activity for study population Potential population reach = High Implementation complexity = Low **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = Low **Sustainability** Yes PLAY is implemented by the Arizona Department of Health and is offered to all children in grades 4 to 6. 24,000 students have participated each year in PLAY since 1996.	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Kelder, Springer (2009) Texas	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All elementary schools in Texas were required to comply with Texas State Senate Bill 19. **High-Risk Population** High (sub-population, regions 10 and 11) 5-13 year olds (target populaiton) Children in regions 10 and 11 are lower-income (>75%) and largely Hispanic (>90%)	**Representative** High All elementary schools in Texas were exposed. **Potential Population Reach** High Exposure = Hgh Representativeness = High **High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Complex Implementation of Texas state Senate Bill 19 -state policy requiring elementary school children to participate in 30 minutes of daily physical activity (PA) or a total of 135 minutes per week. COMPLEX: Bill required the Texas Education Agency to recommend coordinated school health programs (classroom curriculum, physical activity, child nutrition services, parent involvement) and required that schools adopt and receive implementation training in "approved" programs by 2007. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Changes to the physical education curriculum, coordinated school health programs, implementation training Specialized expertise: Implementation training for teachers (frequency and duration not reported) Resources needed: Materials for coordinated school health programs, materials for school implementation training Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**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 lthe study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** No Impact for Overweight/ obesity in Lower-income, Hispanic children No Impact for Physical Activity in Lower-income, Hispanic children Effectiveness for high-risk populations = Not effective for overweight/obesity and physical activity in lower-income, Hispanic children Potential high-risk population reach = High (for sub-population) Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. The percentage of obese children was 10% to nearly 15% higher in Region 11 compared to Region 10 (2004 and 2007, both $p<0.05$). 2. The average minutes of structured student physical activity per week at the state level was 179, exceeding the 135 minutes required by the statute. 3. Roughly half of the schools reported that their school district had not formed a school health advisory committee as mandated in Senate Bill 19, and only 33% of schools had formed a school-level health advisory committee. 4. At the time of the telephone interview, only 40% and 27% of schools, respectively, had included the physical activity minutes and coordinated school health program requirements in their campus improvement plans. 5. Regions 10 &11 compared to the state of Texas averaged 46 more minutes per week of physical education ($p=0.001$) and nearly double the rate of adoption of coordinated school health programs (85% compared to 43%, $p=0.0004$). 6. Based on data from 3 sources (interviews, 5-day logs, questionnaire), both regions exceeded the minimum required physical activity minutes per week (135), with Region 11 offering between 14 (telephone survey, $p=0.26$) and 22 (5-day log, $p=0.05$) fewer minutes per week. 7. The 5-day log indicated a dramatic difference in recess, with 18.9 min/ week in Region 11 and 79.4 min/week in Region 10 ($p=0.0001$).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Datar, Sturm (2004) United States	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 5-7 year olds (target population)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided Fluctuations in physical education class time **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported
Author Cawley, Meyerhoefer (2007) United States	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 14-18 year olds	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided State physical education (PE) requirements for all 50 states **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported
Author Scruggs, Beveridge (2003) Location not reported	**Participation/ Potential Exposure** Not Applicable Only descriptive data provided Target population = 5th graders Frequency = fitness breaks only 3 days out of the month The 27 fifth grade students that received parental consent to participate were exposed to the morning recess, lunch recess, and structured fitness breaks. **High-Risk Population** Not Applicable Only descriptive data provided 10-12 year olds	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only descriptive data provided School policy incorporating playground equipment and three recess breaks into the school day: a daily morning recess, daily lunch recess, and structured fitness breaks (over 3 consecutive days). **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Physical Activity Policies - International						
Author Haerens, Deforche (2006); Haerens, Deforche (2007); Haerens, De Bourdeauduij (2007); Haerens, De Bourdeauduij (2007); Haerens, Cerin (2007); Haerens, Cerin (2008) Belgium	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children in the 10 intervention schools were exposed to the healthy eating and physical activity policies; all children in the 5 intervention with parent schools were exposed to the parent component. **High-Risk Population** Not Reported (for intervention population) 11-18 year olds (target population) 68% lower income (evaluation sample)	**Representative** High All children in the 10 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component 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. MULTI-COMPONENT: School policy to increase healthy food choices by: 1. Selling fruit at school for a very low price or for free at least once a week 2. Pricing water lower than soft drinks 3. Offering fruit for dessert during lunch 4. Offering water for free through drinking fountains COMPLEX: 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 **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Changes in food prices, offering addiitonal 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 **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in Study Population High Impact for Overweight/obesity in Girls No Impact for Overweight/obesity in Boys High Impact for Physical Activity in the Study Population High Impact for Physical Activity in Girls High Impact for Physical Activity in Boys Effectiveness = Effective for overweight/obesity in the study population and girls, not effective for overweight/obesity in boys, effective for phyiscal activity in the study population, girls, and boys Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Applicable	**Provision of Drinking Water, School Food and Beverage Policies, and Food Pricing** *After Two Years* OVERWEIGHT/OBESITY: 1. For all analyses, variance at the school level was not significant (all z< 1.59). 2. For girls there was a significantly lower increase in BMI (from 20.23 ± 3.95 to 21.34 ± 3.83) in the intervention with parent group compared to control (from 19.12 ± 3.50 to 20.78 ± 3.66), F=12.52, p<0.05. 3. For girls there was a significantly lower increase in BMI z score (from 0.24 ± 1.11 to 0.24 ± 1.06) in the intervention with parent group, compared to control (from -0.03 ± 1.05 to 0.14 ± 1.00), F=8.61, p<0.05. 4. In addition, there was a significantly lower increase in BMI z score (from 0.24 ± 1.11 to 0.24 ± 1.06) in the intervention with parent group, compared to intervention no parent group (from 0.28 ± 0.97 to 0.35 ± 0.96), F= 2.68, p=0.05. 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 (F=5.03, p<0.05) and high (F=2.80, p<0.05) 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. NUTRITION: *After One Year* *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 (F=6.1, p<0.05) and control group (F=17.3, p<0.001). *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 (F=3.9, p<0.05) and control group (F=16.7, p<0.001). 10. No significant effect for fat intake or percentage of energy from fat among boys. *After Two Years* 11. In year 2 for girls, decreases in fat intake were higher in the intervention groups (-20g/day) when compared to control group (-10g/day), F=5.8, p<0.05. Percentage of energy from fat decreased by 9% in the intervention group and 5% in the control group (F=13.3, p<0.001).	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Bayer, von Kries (2009) Germany	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children at the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 3-6 year olds (target population)	**Representative** High All children at the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component TigerKids Intervention - Provided at least 30 min/day vigorous physical activity. <u>MULTI-COMPONENT:</u> 1. School policy for kindergartens to replace high energy density snack foods and sugared beverages with fruits and vegetables, water and non-sugared drinks. <u>COMPLEX:</u> 1. Parent materials, newsletters and "TippCards" 2. An internet platform with supporting information was established for teachers and families. 3. Teachers provided with materials and modules for Kindergarten and a CD with songs for use in the day cares. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Nutrition guidelines for snacks/meals served to children, 30 min/ day of physical activity, parent promotional materials, internet platform with supporting information Specialized expertise: 2-day teacher training workshop to learn about implementation of the TigerKids intervention Resources needed: Materials, folder, and CD for Kindergarten teachers, newsletters, TippCards, web staff, telephone hotline personnel Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**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 **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** <u>NUTRITION</u> 1. There was a significantly higher consumption of fruits in the first sample intervention group (66.6%, 95% CI: 63.3-69.8 vs 55.7%, 95% CI: 51.0-60.3; p<0.0001) and the second sample intervention group (66.7%, 95% CI: 63.4-69.9 vs 56.3%, 95% CI: 51.6-60.9; p=0.0002) compared to the control. 2. There was a significantly higher consumption of vegetables in the second sample intervention group (42.7%, 95% CI:39.4-46.1 vs. 33.6%, 95% CI: 29.2-38.1; p=0.0013) compared to the control. 3. There was a lower consumption of high caloric drinks while watching TV observed in the sample one intervention compared to the control (60.4%, 95% CI: 56.6-64.2 vs. 47.7%, 95% CI: 42.4-52.9; p<0.0001). In sample 2, the proportion of children with a low consumption of high caloric drinks increased in the intervention group; a greater increase in the control group rendered the difference between groups non-significant.	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Marcus, Nuberg (2009) Sweden	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All students at the 5 intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 6-10 year olds (target population)	**Representative** High All students at the 5 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population - Not reported Representativeness = High	**Intervention Components** Multi-component STOPP study- Physical activity: Teachers increased non-sedentary behavior in the classroom (goal = increase physical activity by 30 min/day); toys from home that encouraged sedentary behaviors were prohibited; students were not allowed to play computer games at the after school care center for more than 30 minutes. <u>MULTI-COMPONENT:</u> *School nutrition policies that included:* 1. Offering a variety of vegetables to students prior to the main course at school meals 2. Substitution of white bread with whole-grain bread, or a similar product 3. Reduction of sugary meals and snacks 4. Offering lower-fat milk options in place of high-fat products 5. Requiring low-fat sandwich ingredients <u>COMPLEX:</u> 1. Dietary component: Teachers encouraged children to increase vegetable intake. 2. Schools were encouraged to eliminate sweets including those brought from home. Parents were encouraged to not send sweets from home. 3. Newsletter twice a year for parents and school staff. 4. School nurses received education about obesity-related problems. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School meal changes, increased physical activity in class (30 min/day), restrictions on use of sedentary toys, promotion of vegetables, elimination of sweets at school and brought from home, newsletter to parents and staff, educational material for school nurses Specialized expertise: School personnel met with research staff every term to increase their awareness of the intervention. Resources needed: Newsletter, educational material for school nurses, funds for healthier foods Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in the Study Population High Impact for Overweight/obesity in Boys No Impact for Overweight/obesity in Girls No Impact for Physical Activity in the Study Population Effectiveness = Effective for overweight/obesity in the study population and boys, not effective for overweight/obesity in girls, not effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** <u>NUTRITION:</u> 1. Intervention families with 3rd and 4th grade children reported healthier eating habits at home compared to controls with significant differences in consumption of high-fat dairy products (p=0.001), sweetened cereals (p=0.02), sweet products (p=0.002) [data not shown].	<u>UNINTENDED POSITIVE RESULTS:</u> 1. Researchers observed that families from the intervention schools reported healthier eating habits, which indicated that the change in attitudes and rules at school may have facilitated parental selection of healthier foods at home.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Manios, Kafatos (1998), Manios, Moschandreas (1999), Manios, Kafatos (1999), Manios, Moschandreas (2002), Kafatos, Manios (2007); Kafatos, Manios (2005); Manios, Kafatos (2006); Manios, Kafatos (2006) Crete	**Participation/ Potential Exposure** Participation = Not reported Exposure = High sAll children in the intervention primary school were exposed to the intervention (recruited as first graders and received the intervention for 6 years) **High-Risk Population** Not Reported (for intervention population) 5-12 year olds (target population) 49.8% of children were from urban areas and 50.2% were from rural areas	**Representative** High All children in the primary school were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex The "Cretan Health and Nutrition Education program"- school policy to increase physical activity and fitness during two 45 minute physical education (PE) sessions per week that include: 1. Activities to increase fitness (e.g., skipping, fitness stations, aerobic group games) 2. Classroom sessions (4-6 hours per year) to increase knowledge and goal setting COMPLEX: 1. Health education was 13-17 hours of instruction annually to develop behavioral capability, expectations and self-efficacy for healthful eating, physical activity and physical fitness. Teacher manuals, audio-taped stories, posters and student workbooks were provided to assist teachers. 2. Parent meetings held twice annually at each school. 3. Parent booklets provided nutrition guidelines and information on physical activity. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities - School physical education curriculum changes, health education, parent meetings Specialized expertise - Not reported Resources needed - Teacher manuals, audio-taped stories, posters, student workbooks, parent booklets, materials for parent meetings, materials for teacher orientations Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/obesity in the Study Population High Impact for Physical Activity in the Study Population High Impact for Physical Activity in Girls High Impact for Physical Activity in Boys Effectiveness = Effective for overweight/obesity in the study population, effective for physical activity in the study population, girls, and boys Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	PHYSIOLOGICAL RESPONSE: 1. Total cholesterol and low-density lipoprotein (LDL) cholesterol were lower in the intervention group after 3, 6 and 10 years compared to the control group (data not shown).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Angelopoulos, Milionis (2009) Greece	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All 5th graders at the 13 intervention schools were exposed to the intervention. **High-Risk Population** High Loannina (site of the intervention) is one of the poorest prefectures in Greece with some of the highest obesity rates. Lower income,10-11 year olds (target population) Intervention schools: 90.3% Greek, 9.7% immigrant Control schools: 88% Greek, 12% immigrant 75% Urban population, 25% rural population (evaluation sample)	**Representative** High All 5th graders were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component Two 45 minute physical education sessions per week; playgrounds and school yards at intervention schools accessible after the end of the curricular program. MULTI-COMPONENT: 1. Daily provision of fresh fruits and juices in school cafeterias COMPLEX: 1. Nutrition component: Parents were encouraged to have more fruits and vegetables at home. 2. Class curriculum component: 1-2 hours/ week was integrated into existing school curriculum including self-esteem, body image, nutrition, physical activity, fitness and environmental issues. 3. Parental component: Fruit and vegetable bazaars were held where parents were given results of children's medical and nutritional assessment. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Addition of fresh fruits and juices to school lunches, physical education sessions, opening of school yards after the curriculum program, classroom curriculum (health education), parent education/promotion, fruit and vegetable bazaars Specialized expertise: Not reported Resources needed: Classroom curriculum, funds to organize fruit and vegetable bazaars, funds to provide fresh fruit and fruit juices in the intervention schools, staff to supervise school yards after the curriculum program, materials for physical education sessions Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in the Study Population High Impact for Physical Activity in the Study Population Effectiveness = Effective for overweight/obesity and physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** High Impact for Overweight/ obesity in Lower-income Children High Impact for Physical Activity in Lower-income Children Effectiveness for high-risk populations = Effective for overweight/obesity and physical activity in lower-income children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	**Provision of Fruits and Vegetables in School** NUTRITION: 1. Mean daily consumption of fruits increased in the intervention group (0.4, 95% CI 0.1 to 0.7) but decreased in the control group (-0.2, 95% CI -0.4 to 0.1; p<0.05). 2. Intervention children decreased mean consumption of total fat/oils and sweets/beverages (fats and oils -1.6, 95% CI -2.4 to 0.9; sweets and beverages -0.8, 95% CI -1.3 to -1.4), while increases were found for control children (fats and oils +0.7, 95% CI 0.05 to 1.4; sweets and beverages +0.2, 95% CI -0.2 to 0.6; p<0.05 for all). 3. Intervention children decreased mean consumption of dairy products (-0.2, 95% CI -1.4 to 0.1), while increased consumption was found for control children (0.2, 95% CI 0.02 to 0.5; p=0.008).	PHYSIOLOGICAL RESPONSE: 1. Systolic blood pressure (SBP) and diastolic blood pressure (DSP) levels increased in the control children (systolic +1.9, 95% CI 1.0 to 2.9); diastolic +2.3, 95% CI 1.6 to 3.1) and decreased in the intervention children (systolic -1.6, 95% CI -2.7 to -0.6; diastolic -0.5, 95% CI -1.3 to 0.3), p=0.016 and p=0.005, respectively. 2.The significant associations between the change observed in BMI and the changes in SBP and DBP indicate that the effect of the implemented intervention on SBP and DBP was mediated by the change induced in BMI. OTHER: 3. Mediating variable analysis revealed that the effect of the intervention on BMI, systolic blood pressure and diastolic blood pressure was no longer significant (β=-0.08, p=0.123; β=-0.11, p=0.065; β=-0.13. p=0.053, respectively) after controlling for possible mediators, such as the changes observed in MVPA, food intake and BMI. 4. The significant associations between the change observed in BMI and the changes observed in fruit intake and fats and oils intake indicate that the effect of the intervention on BMI mediated via the changes in fruits, fats and oils intakes.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Simon, Wagner (2004), Simon, Wagner (2006), Simon, Schweitzer (2008) France	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low All sixth graders in the intervention schools were exposed to the intervention. About 50% of the students in the intervention participated in at least one weekly activity. **High-Risk Population** Not Reported (for intervention population) 11-15 year olds (target population) Intervention: 13.7% lower-income Control: 14.7% lower-income	**Representative** Low All 6th graders were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Low	**Intervention Components** Complex Intervention Centered on Adolescents' Physical Activity and Sedentary Behavior (ICAPS) - school policy to provide new opportunities for non-competitive physical activity (e.g., informal games, dancing) during school hours (e.g., recess, lunch, breaks). COMPLEX: 1. Health education focused on physical activity (PA) and sedentary behaviors. 2. Organized sporting events for students 3. Bicycle and on-foot school transfers 4. Annual gathering to meet other students and learn about intervention activities 5. Advocacy activities focused towards policymakers to promote PA outside of schools (e.g., low-cost or free of charge entry to recreation facilities/pool, development of bikeways around schools) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: New opportunities for non-competitive physical activity, health education, organized sporting events, bicycle and on-foot school transfers, annual student gathering, advocacy activities Specialized expertise: Sport qualified instructors to organize the physical activity opportunities Resources needed: Trained sport qualified staff to carry out the organized physical activity, staff to conduct education sessions and work with policymakers, materials for physical activity and education sessions Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** Low Impact for Overweight/obesity in the Study Population Low Impact for Physical Activity in the Study Population Low Impact for Physical Activity in Girls Low Impact for Physical Activity in Boys Effectiveness = Effective for overweight/obesity in the study population, effective for physical activity in the study population, boys, and girls Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes The authors stated that the intervention was specifically designed to be integrated into the community environment, which may facilitate sustainability at the institutional level.	**Screen Time** 1. Intervention students also had a greater reduction over time of TV/video viewing than controls, with a difference across groups of -16 minutes/per day at 4 years ($p<0.01$).	SELF-EFFICACY: 1. After 6 months, intervention girls had higher levels of self-efficacy (adjusted difference = 3.9±0.8, $p<0.10-4$) and intent (adjusted difference= 1.8±0.7, $p<0.04$) towards physical activity than control girls. PHYSIOLOGICAL RESPONSE: 2.Irrespective of their initial weight status and independently of their body fat, compared to controls, intervention participants had a higher increase of high-density lipoprotein cholesterol concentrations at 4 years (+3.43 mg per 100 mL, 95%CI: 1.73 – 5.13, $p<0.001$).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Lazaar, Aucouturier (2007) France	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = elementary school children Only 1st and 2nd grade children in the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 6-10 year olds (target population)	**Representative** Low All 1st and 2nd grade intervention school children were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Simple School policy to increase the amount of time children spend physically active by requiring children to participate in additional physical activity after class, twice a week for one hour. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities - School physical education changes (additional activity twice per week) Specialized expertise - Tutoring for students from physical education teachers on how to carry out the additional physical activity sessions (frequency and duration of tutoring sessions not reported) Resources needed - Trained physical activity instructors, materials for physical activity sessions **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** Low Impact for Overweight/ obesity in Study Population Low Impact for Overweight/ obesity in Girls Low Impact for Overweight/ obesity in Boys Effectiveness = Effective for overweight/ obesity in study population, girls, and boys Potential population reach = Low Implementation complexity = Low **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk population = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = Low **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Plachta-Danielzik, Pust (2007); Danielzik, Pust (2007); Danielzik, Pust (2005); Muller, Asbeck (2001) Germany	**Participation/ Potential Exposure** Participation = Not reported Exposure = High Target population not clearly stated. First grade students (5-7 years old) from the 14 intervention schools received the nutrition and physical education course including the activity breaks. **High-Risk Population** High Exposure = High High-risk population = High Representativeness = High	**Representative** High All first grade students were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Complex The Kiel Obesity Prevention Study (KOPS) – 15 minute "activity breaks" provided to 1st grade children during a 6 hour nutrition and physical education course COMPLEX: 1. Parent night reinforcing messages about healthy eating and keeping active 2. Face-to-face counseling for families with overweight or obese children or parents **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: 15 minute activity breaks, nutrition and physical education course, parent night, face-to-face counseling for families Specialized expertise: Skilled nutritionist to deliver the classroom education Resources needed: Nutritionist and teachers to carry out the educational course and activity breaks, materials for the education course, counselors for the family counseling sessions, materials for parent night Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in the Study Population Effectiveness = Effective for overweight/ obesity for study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** High Impact for Overweight/ obesity in Lower-income Individuals Effectiveness for high-risk populations = Effective for overweight/ obesity for lower-income individuals Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Bonhauser, Fernandez (2005) Chile	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = adolescents living in a low socioeconomic area in Santiago Students in 2 of the 6 ninth grade classrooms in the school were exposed to the intervention. 81% of pupils in intervention group completed the full program. **High-Risk Population** High (overall population is lower-income) 14-16 year olds (target population) 65.3% lower income (exposed) 53.0% lower income (unexposed)	**Representative** Low Only 2 of the 6 ninth grade classrooms were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = Low **Potential High Risk Popluation Reach** Low High-risk population = High Representativeness = Low	**Intervention Components** Simple School policy adding two sessions (90 minutes each) of physical education (PE) to the curriculum for a total of three 90 min. sessions a week **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional physical education sessions (2 additional 90 min sessions per week) Specialized expertise: Not reported Resources needed: Stipend for teachers to teach extra sessions ($6 per extra hour), exercise equipment Costs: Not reported **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** Low Impact for Physical Activitiy in the Study Population Effectiveness = Effective for physical activity in study population Potential population reach = Low Implementation complexity = Low **High-risk Population Impact** Low Impact for Physical Activity in Lower-income Individuals Effectiveness for high-risk populations = Effective for physical activity in lower-income individuals Potential high-risk population reach = Low Implementation complexity = Low **Sustainability** Not Reported	Not Reported	MENTAL HEALTH: 1. A significant improvement of 13.7% in the anxiety score was observed in the intervention group compared with a 2.8% reduction in the control group (P<0.0001). 2. The self esteem score increased by 2.3% in the intervention group but decreased by 0.1% in the control group (P<0.001). 3. No differences in depression symptom scores were observed.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Graf, Koch (2008), Graf, Koch (2005) Germany	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the 12 intervention schools received the intervention. **High-Risk Population** Not Reported (for intervention population) 5-10 year olds (target population)	**Representative** High All children in the 12 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex The Children's Health International Trial (CHILT) project – school policy to increase physical activity and improve motor skills by: 1. Requiring physical activity (PA) at least once each morning during lessons for at least five minutes (e.g., coordination, posture and balance) 2. Providing opportunities for physical activity during leisure periods 3. Revising the physical education curriculum to optimize motor skills COMPLEX: 1. One extra health education lesson per week (20-30 min) **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Physical activity required at least once during morning lessons, additional opportunities for physical actiivty during leisure periods, physical education curriculum changes to optimize motor skills, extra health education lesson per week Specialized expertise: Yearly training for teachers on how to implement the intervention Resources needed: Materials/ equipment for the physical activity sessions, "My Body" curriculum and other health education classroom materials, materials for teacher trainings Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population High Impact for Physical Activity in the Study Population High Impact for Physical Activity in Girls Effectiveness = Not effective for overweight/ obesity in the study population and effective for physical activity in the study population and girls Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Sahota, Rudolf (2001); Sahota, Rudolf (2001) Leeds, United Kingdom	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children in the 5 intervention schools were exposed to the intervention. **High-Risk Population** Low 8-10 year olds The schools had 1 to 42% children from ethnic minorities and 7 to 29% entitled to free school meals, (compared with 11% and 25%, respectively, for Leeds children as a whole)	**Representative** High All children in the 5 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** Low High-risk population = Low Representativeness = High	**Intervention Components** Multi-component APPLES program (Active program promoting lifestyle education in schools) that promoted physical activity through formal education 1. Developing and implementing action plans to promote physical activity MULTI-COMPONENT: 1. School policies to promote healthy modification of school meals. 2. Development and implementation of school action plans to promote healthy eating **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, school action plans increasing opportunities for physical activity and healthy eating Specialized expertise: Intervention team composed of a dietician, community pediatrician, health promotion specialist, psychologist, obesity physician and nutritional epidemiologist. The intervention teamed trained the teachers and provided resources and support. Resources needed: Dietitian, pediatrician, health promotion specialist, psychologist, nutritional epidemiologist, funds for conducting school action plans (i.e., playground facilities, etc.), funds for teacher training Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**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** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = Low Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** NUTRITION: 1. Intervention children had higher vegetable intakes than control children at follow-up (weighted mean difference= 0.3, 95% CI: 0.2 to 0.4) 2. Overweight intervention children had higher vegetable intakes than overweight control children at follow-up (mean difference= 0.3, 95% CI: 0.1 to 0.5), when comparing the 24-hour food recall. 3. Obese intervention children had higher vegetable intakes than obese control children at follow-up (mean difference = 0.3, 95% CI: -0.1 to 0.6) 4. Obese intervention children had lower fruit intakes than obese control children at follow-up (mean difference= -1.0, 95% CI: -1.8 to -0.2), when comparing 24 hour recall. 5. According to the 3-day food diaries, overweight intervention children had higher intakes of foods and drinks high in sugar than overweight control children (mean difference= 0.8, 95% CI: 0.1 to 1.6). No other differences in dietary consumption were found using the 3-day diaries.	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Ho, Gittelsohn (2008); Rosecrans, Gittelsohn (2008); Ho, Gittelsohn (2006) Canada	**Participation/ Potential Exposure** Participation = Not Reported Exposure = Low All intervention school students were exposed to the school lunch menu changes, but only 3rd and 4th grade students received the physical activity and education component. The community members that visited the stores were exposed to the shelf labels and promotional activities. **High-Risk Population** High 100% Native American/ Alaskan Native (intervention population) Intervention group average age = 40.3; Control group average age = 44.7	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Exposure = Low Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = High Representativeness = Not reported	**Intervention Components** Multi-component Zhiiwapenewin Akino'maagewin: Teaching to Prevent Diabetes (ZATPD) program - physical activity breaks during lessons MULTI-COMPONENT: 1. Schools were encouraged to adopt policy of no soda and chips in school and review breakfast and lunch programs for nutritional content COMPLEX: 1. Community component: mass media (e.g., posters, flyers, local access cable, radio), cooking demos and taste tests in band offices and community events (e.g., walking challenges, family fun nights) 2. Recipe cards, posters, newsletters and letters; 4 family action packs sent home over the year 3. Store component: Promotion of healthier alternatives through shelf labels, posters, flyers, and cooking demos or taste tests; managers encouraged to stock low-sugar, low-fat and high-fiber foods 4. 16 lessons in 3rd grade and 17 lessons in 4th grade promoting healthy eating and physical activity **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu changes, physical activity breaks, promotional activities in school (e.g., newsletter, posters), family action packs, store shelf-labels, promotional events in stores (e.g., taste tests, flyers), additional healthier items stocked in stores, mass media promotions in the community, community events (e.g., walking challenges, family fun nights) Specialized expertise: Field supervisor, project coordinator, trained program assistants from the community Resources needed: Physical activity lessons for breaks, school component resources (recipe cards, school newsletter, posters, letters, family action packs), resources for store component (shelf labels, posters, flyers, materials for cooking demos/ taste tests), posters, flyers and messages for mass media, materials for community cooking demos or taste tests, materials for community events (walking challenges, family fun nights), community program assistant, project coordinator, and field supervisor Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Not reported for general population Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not effective for overweight/obesity and physical activity in Native American/Alaskan Natives Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes At the end of the program, most store owners agreed to continue stocking healthier foods, and some stated they would post shelf labels and posters if given the materials. All communities expressed a willingness to continue program activities if supplied with materials, but there was no plan made for such continuation.	**School Food and Beverage Policies** NUTRITION: 1. At follow-up, intervention respondents had significantly higher healthy food acquisition scores than comparison respondents after adjustment for baseline scores and other covariates (β=0.947, p=0.003; adjusted R2= 0.4058).	KNOWLEDGE AND AWARENESS: 1. There were no significant differences between groups in the healthiness of food preparation score and food intention scores.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Kain, Leyton (2008) Chile	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the 3 intervention schools (1st through 8th grade) were exposed to the intervention. **High-Risk Population** Low 6-13 year olds (target population) 32% participated in the School Lunch Program in the intervention schools, 36% participated in the School Lunch Program in the control school Note: School Lunch Program Participation was used as an indirect measure of poverty.	**Representative** High All children in the 3 schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** Low High-risk population = Low Representativeness = High	**Intervention Components** Complex School policy requiring 90 minutes of additional weekly physical education classes. <u>COMPLEX:</u> 1. Nutrition education for 8-11 hours (grades 4 to 6) or 5-6 hours (grade 7) during year 1, and 4 hours (grades 5 to 8) in year two. 2. Two educational lessons for parents (year one) 3. One group meeting to advise parents of obese children (year 2) 4. Active recess provided by schools for 4 months during year 1, but discontinued in year 2. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Addition physical education classes weekly, nutrition education for students, parent educational lessons, parent meeting, active recess Specialized expertise: Training for teachers on how to implement the intervention (frequency and duration not reported), nutritionist to teach the parent educational sessions Resources needed: Resources for teacher trainings, materials for nutrition education sessions and parent meeting Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in Boys High Impact for Overweight/ obesity in Girls Effectiveness = Effective for overweight/obesity in boys and girls Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = Low Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Sollerhed, Ejlertsson (2008) Sweden	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the intervention school were exposed to the intervention. **High-Risk Population** Not reported (for intervention population) 6-12 year olds, Rural (target population)	**Representative** High All children in the school were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex School policy to increase physical education classes from 1-2 classes to 4 classes per week at 40 minutes each. Day 5 allowed children to participate in activities outside for 1 hour. <u>COMPLEX:</u> 1. Obese children were offered a voluntary lesson per week to increase motor skills and self-esteem. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Additional physical education classes, voluntary lessons for obese children to increase motor skills and self-esteem Specialized expertise: Not reported Resources needed: Physical education teacher, classroom teachers, materials for physical education classes Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in the Study Population High Impact for Physical Activity in the Study Population Effectiveness = Effective for physical activity and overweight/obesity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Jurg, Kremers (2006) Netherlands	**Participation/ Potential Exposure** Participation = Not reported Exposure = Not reported The JUMP-in intervention was developed for students in primary school from grades 1 to 6. The study conducted the evaluation on only 4th through 6th graders and it was unclear if all students 1st - 6th grade received the intervention or only the 4th - 6th graders. **High-Risk Population** Not Reported (for intervention population) Lower income, 5-13 year olds (target population) 72% foreign origin (intervention sample), 93% foreign origin (control sample)	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Participation/ potential exposure = Not reported Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Complex JUMP-in - school policies establishing regular breaks for physical activity (PA), relaxation, and posture exercises during classroom lessons and sports activities during school and after-school (sport clubs) COMPLEX: 1. Pupil follow-up system: Physical education (PE) teachers monitor students once a year to stimulate students in their fitness development 2. Card game to raise awareness of the importance of PA for health 3. Parental information services: information given (in parents' language) about PA and their role in child's health. 4. Activity week: brings together the components of JUMP-in during a special activity week **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Regular physical activity breaks, sports activities during and after-school, pupil follow-up system, card game to raise awareness, information for parents, activity week Specialized expertise: Training for teachers on how to implement the classroom physical activity component (frequency and duration not provided), trained information officers to deliver the parent information sessions Resources needed: Personnel, class PA activity materials (calendars), card game materials, funds to organize activity week and parental information service Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Effective for physical activity in the total population Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes There are plans in place to disseminate JUMP-in across a larger area in the Amsterdam region	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Liu, Hu (2008) China	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in grades 1-5 in the intervention school were exposed to the Happy 10 program. **High-Risk Population** Not Reported (for intervention population) 6-12 year olds	**Representative** High All children in grades 1-5 were exposed. **Potential Population Reach** More Evidence Needed Exposure = Low Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Happy 10 program –10 minutes of classroom-based physical activity at least once per day COMPLEX: 1. Posters and stickers used to track progress in each class **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: 10 minutes of classroom-based physical activity at least once per day, posters and stickers to track progress Specialized expertise: Not reported Resources needed: Teachers, classroom physical activity materials, tracking poster Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in the Study Population HIgh Impact for Overweight/ obesity in Girls No Impact for Overweight/ obesity in Boys High Impact for Physical Activity in the Study Population Effectiveness = Effective for overweight/obesity in the study population and girls, not effective for overweight/ obesity in boys, effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes The Happy 10 program is supported by the National Institute for Nutrition and Food Safety, Chinese Center for Disease Control and Prevention and has been implemented in urban Beijing since 2004.	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Saksvig, Gittelsohn (2005); Gittelsohn, Harris (1995); Hanley, Harris (1995) Canada	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All 3rd, 4th and 5th graders in the school were exposed to classroom curriculum, physical activity breaks and family and peer components. All students in the school were exposed to the school wide ban of high fat and high sugar snacks and the health breakfast snack program. **High-Risk Population** High 7-14 year olds 100% Native American	**Representative** High All 3-5 graders were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Multi-component Sandy Lakes Diabetes Prevention Curriculum (adapted from CATCH and Kahnawake School Diabetes Prevention curricula) included brief physical activity breaks during the class curriculum <u>MULTI-COMPONENT:</u> 1. School wide ban of high fat and high sugar snack foods and adoption of healthy breakfast snack program that offered each kindergarten through 5th grade student a glass of 1% milk, fruit, cheese and rice cake. A healthy school lunch program was developed and tested, but never adopted. <u>COMPLEX:</u> 1. Family component: Parents/families received healthy eating/physical activity messages through local radio, information booths at parent teacher nights, and newsletters. 2. Peer component: opportunities for peers to act as role models (e.g., children's video cooking club) 3. Class curriculum component: taught in grades 3-5 for 45min/lesson for 16 weeks **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School ban on high fat and high sugar snacks, healthy breakfast snack program, classroom curriculum included physical activity breaks, promotional messages to families, peer role-modeling activities Specialized expertise: Not reported Resources needed: Newsletters, resources for peer component (e.g. cooking club videos), relationships with local media, materials for information booths, breakfast snacks (milk, fruit, cheese, rice cakes) Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population Effectiveness = Not effective for overweight/obesity in Native American Children Potential population reach = High Implementation complexity = High **High-risk Population Impact** No Impact for Overweight/ obesity in Native American Children Effectiveness for high-risk population = Not effective for overweight/obesity in Native American Children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Yes Authorities overseeing the healthcare services of the first nations in Canada requested the curriculum to use in other communities.	**School Food and Beverage Policies** <u>NUTRITION:</u> 1. The percent of energy from total fat was reduced from baseline (mean 33.8, SD=7.9) to follow- up (mean 31.9, SD=8.3, $p<0.05$). It decreased for boys (from 34% to 31%, $p<0.05$), but not for girls (from 34% to 33%, $p<0.2$). 2. Dietary intention changed in girls from baseline to follow-up (from 3.9 to 4.7, $p<0.001$) and boys (from 3.2 to 3.7, $p<0.001$) and for students who were obese at baseline (from 3.5 to 4.2, $p<0.001$).	<u>KNOWLEDGE AND AWARENESS:</u> 1. Knowledge about foods low and high in dietary fat increased for girls (5.5 vs. 7.0, $p<0.001$) and boys (5.2 vs. 7.1, $p<0.001$) and for students who were obese at baseline (5.9 vs. 7.6, $p<0.001$) and not obese at baseline (5.0 vs. 6.7, $p<0.001$). 2. The curriculum knowledge scale increased for girls (2.8 vs. 4.4, $p<0.001$) and for boys (2.9 vs. 4.6, $p<0.001$), for students who were obese at baseline (3.4 vs. 4.6, $p<0.001$) and for students who were not obese at baseline (2.6 vs. 4.5, $p<0.001$). 3. The dietary preference scall changed between baseline and follow-up for girls (2.9 vs. 3.6, $p<0.003$) and boys (2.2 vs. 2.9, $p<0.002$) and for students who were not obese at baseline (2.3 vs. 3.2, $p<0.001$). 4. Dietary self-efficacy change significantly for girls (18.6 vs. 20.4, $p<0.05$) and for boys (17.4 vs. 19.2, $p<0.05$) and for students who were obese at baseline (17.7 vs. 20.4, $p<0.01$).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Wardle, Brodersen (2007) England	**Participation/ Potential Exposure** Participation = Not reported Exposure = Not reported **High-Risk Population** Not reported (for intervention population) 11-16 year olds (target population) 60.6% White, 25.3% Black, 11.1% Asian, 3.0% other ethnicity (averages for evaluation sample)	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Participation/potential exposure = Not reported Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Simple Frequency of physical education (PE) class in an average week **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Changes in the frequency of physical education class in an average week Specialized expertise: Not reported Resources needed: Not reported Costs: Not reported **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = effective for overweight/obesity in boys, not effective for overweight/obesity in girls Potential population reach = More evidence needed Implementation complexity = Low **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = Low **Sustainability** Not Applicable	Not Reported	ENVIRONMENT CHANGE: 1. 25 schools reported 1 weekly session of PE, 9 schools reported 2 sessions and 2 boys' schools reported 3 weekly PE sessions.
Author Trudeau, Shephard, Bouchard (2003); Trudeau, Laurencelle (2004); Trudeau, Shephard, Arsenault (2003); Trudeau, Shephard (2001); Trudeau, Espindola (2000) Canada	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided Adults	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data is provided. School policy requiring 5 hours of physical education (PE) per week taught by a specialist for primary school children. **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	1. Active adult females were more likely to have participated in intense PA (1.3 ± 0.2 hrs/week-1 vs 0.54 ± 0.08 hrs/week-1), intense organized PA (0.29 ± 0.10 hrs/week-1 vs 0.08 ± 0.03 hrs/week-1), intense non-organized PA (0.27 ± 0.05 hrs/week-1 vs 0.14 ± 0.03 hrs/week- 1), and intense recreational PA (0.16 ± 0.03 hrs/week-1 vs 0.09 ± 0.02 hrs/week-1) as children. 2. The weekly PA of adult control females was significantly associated with the time spent in non-organized intense PA as a child ($r=0.48$, $p<0.01$). No other significant associations were found in women. 3. The PA of adult males was significantly correlated with the weekly time spent in organized PA as a child ($r=0.26$, $p<0.05$). 4. Control males showed an inverse association between their current PA and the time that they had spent in low-intensity recreational PA during childhood ($r= -0.40$, $p<0.05$). 5. In males in the intervention group, adult PA was significantly correlated with both total organized PA ($r=0.34$) and low-intensity organized PA ($r=0.32$) as a child, ($p<0.05$ for both). 6. In males, a stepwise multiple regression analysis revealed that participation in organized PA as a child significantly predicted current weekly PA ($R^2=0.071$, SEE=0.375, $F=5.43$; $df=1$; $p<0.05$).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Cleland, Dwyer (2008) Australia	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable 7-15 year olds (baseline) 26-36 year olds (follow-up)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided School policy requiring higher levels of compulsory school physical activity **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Environment Policies - United States						
Author Ritenbaugh, Teufel-Shone (2003); Teufel, Ritenbaugh (1998) New Mexico	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All students in the high school classes of 1999 and 2000 were exposed to the intervention. **High-Risk Population** High 100% Native American	**Representative** High The intervention children at Zuni high schools. Students from 2 schools participated. **Potential Population Reach** High Exposure = High Representativeness = High Exposure = High **Potential High Risk Popluation Reach** High Representativeness = High Exposure = High	**Intervention Components** Multi-component Zuni Diabetes Prevention Program included school policies to: creation of youth fitness center open during lunch and after school; new exercise equipment and climbing wall; sponsored classes, tournaments, and other activities. MULTI-COMPONENT: 1. Replace sugary soft drinks with diet beverages in school vending machines; ban unhealthy snacks and sugary beverages from the wellness center; increase fruits and vegetables (F&V) and decrease fat in school lunches; provide palatable water in 5 gallon water coolers. COMPLEX: 1. Diabetes prevention curriculum: 9 weeks of physical education (PE) class devoted to orientation to wellness center and diabetes prevention; biology and food service class learning units; new elective on diabetes prevention. 2. Posters, school announcements and radio PSAs 3. Social network component: Efforts to develop 3 supportive social networks; Teen Task Force (6-12 youth) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Creation of a fitness center; providing water to students; providing fruits and vegetables at lunch; decreasing sugar sweetened beverages and snacks from the vending machines and wellness center. Specialized expertise: Not reported Resources needed: Not reported Cost: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Not reported Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** NUTRITION: 1. By year 3 the 400 students of Zuni high school were consuming virtually no sugared soft drinks at school (down from 800 12-ounce cans/week/400 students). 2. Environmental change accounted for a decrease in consumption of sugared soft drinks of about 4.8 ounces/day/student.	1. Fasting glucose levels varied little over the 3 years, with levels for most youth well within the normal range. 2. The fasting insulin levels for Zuni females and males showed a significant downward trend over 3 years both at the median (Coeff= -12, p=0.03 females, Coeff= -18, p<0.001 males) and at the 75th percentile (Coeff= -27, p<0.05 females, Coeff= -39, p<0.001 males). By Year 3, neither Zuni males nor females were different from the appropriate Anglo comparison group. 3. 30-min insulin levels for Zuni females and males showed downward trends at both the median (Coeff= -261, p<0.001 females, Coeff= -135, p=0.05 males) and the 75th percentiles (Coeff= -260, p<0.001 females, Coeff= -342, p<0.001 males) over the 3 years. However, at year 3 levels for Zuni females remained higher than Anglo girls. In year 3 Zuni males were not different from the Anglo males.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Cradock, Melly (2007) Massachusetts	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 12-15 year olds Population density per square mile ranged from 2,664 to 18,868. Proportion of households living in poverty ranged from 2% to 16%. 42% Female; 56% White; 11% Black; 14% Hispanic; 11% Asian; 8% Other (evaluation sample)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided School campus characteristics including size of the campus, play and building areas **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported
Author Colabianchi, Kinsella (2009) Ohio	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided Urban (414,500 city residents); 53.8% African American, 38.7% White, 1.5% Asian, 7.7% Hispanic, 4.5% other races; 39% of children under the age of 17 that lived near the school grounds lived in poverty (area demographics)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided "School Ground as Community Parks" school grounds renovations (e.g., playground equipment, learning garden, safety improvements) **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	1. The total number of play features was three times as high at the renovated playgrounds compared to the not-yet-renovated playgrounds (mean=45.2 and mean=15.5, respectively; p=0.001). The renovated playgrounds also had more safety features than the not-yet-renovated playgrounds (p=0.05).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Environment Policies - International						
Author Stratton, Leonard (2002); Stratton (2000) England	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children participating in morning and afternoon playtimes in the intervention school were exposed to the playground markings. Approximately 200 children at both intervention and control schools used the playground daily. **High-Risk Population** Not Reported (for intervention population) 5-7 year olds, Urban (target population)	**Representative** High All children playing during playtime at the schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High Exposure = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Placement of brightly colored markings on the school playground surface COMPLEX: 1. Provision of a single football on the playground (no other equipment) **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Placement of colored markings on the playground surface, provision of a single football Specialized expertise: Not reported Resources needed: Local business to place markings on the playgrounds, football for the playground **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/obesity in Study Population Low Impact for Physical Activity in Study Population Effectiveness = Not effective for overweight/obesity, somewhat effective for physical activity in study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. There was a significant increase in recess duration as a result of the intervention period from 73.8 (± 35.2) to 93.1 (± 28.5) minutes (F=25.1; p≤0.01). 2. The mean rate of energy expenditure increased by 6.1% during the intervention, and the rate of energy expenditure in the intervention group exceeded that in the control group by 7.8% [F(1, 84)= 5.81; p≤ 0.02]. 3. Total energy expenditure during play was 17% higher in the intervention group compared to the control group, and increased by 35% during the intervention [F(1,84)= 5.79, p≤0.02]. 4. The mean heart rate of the intervention group increased by 7 beats min-1 during the intervention compared to little change in the control group. ANOVA analysis found a significant interaction for mean heart rate [F(1,278)= 6.00, p≤0.01) and a significant main effect for the intervention [F(1,278)= 8.09, p ≤ 0.01), but no significant main effect between the intervention and control groups.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Verstraete, Cardon (2006) Belgium	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = elementary school children Only 5th and 6th grade classrooms in the intervention school were given a set of game equipment and activity cards. **High-Risk Population** Not Reported (for intervention population) 10-12 year olds (target population)	**Representative** High All children in fifth and sixth grade intervention classrooms were exposed. **Potential Population Reach** Low Exposure = Low Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Simple Game equipment and activity cards provided to school classrooms for use during recesses and lunch breaks **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Provision of game equipment and activity cards to classrooms Specialized expertise: Not reported Resources needed: Activity cards, game equipment (e.g., jump ropes, flying discs, badminton racquets), research staff members to introduce the game equipment, teachers **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** Low Impact for Physical Activity in the Study Population Low Impact for Physical Activity in Girls No Impact for Physical Activity in Boys Effectiveness = Somewhat effective for physical activity in the study population and girls and not effective for physical activity in boys Potential population reach = High Implementation complexity = Low **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = Low **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Loucaides, Jago (2009) Cyprus	**Participation/ Potential Exposure** Participation = Not reported Exposure = Not reported Target population not reported. 5th and 6th grade children in the intervention school were exposed to the game courts and all children in the intervention schools (n=2) were exposed to the playground markings and jump ropes. **High-Risk Population** Not Reported (for intervention population) 10-12 year olds (target population)	**Representative** High Fifth and sixth grade intervention classrooms were exposed. **Potential Population Reach** More Evidence Needed Participation/ potential exposure = Not reported Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex School policy providing playground markings (e.g., hopscotch, animals, clock face, smiley face, trails), long and short jump ropes and game court allocation during school breaks. COMPLEX: 1. Students were taught rules for proper and safe equipment use. **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Playground markings, provision of equipment (jump ropes), game court allocation, education, student education on equipment use Specialized expertise: Not reported Resources needed: Playground markings, playground equipment (jump ropes), funding for resources Costs: The intervention was of low cost (€280/$359). **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Somewhat effective for physical activity for total population, boys, and girls Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Applicable Pilot study	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Stratton, Mullan (2005) Wales, England	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the intervention early primary (4-7 year olds) and late primary (7-11 year olds) schools were exposed to the intervention. **High-Risk Population** High 4-11 year olds (target population) Note: The authors stated that the schools were located in areas of deprivation in Northeast Wales, but did not provide any statistics.	**Representative** High All children in the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Simple Multi-color markings on the playgrounds **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Multi-color markings on the playgrounds Specialized expertise: Not reported Resources needed: Bright, fluorescent paint, playground marking templates, personnel to paint Costs: 800£ for each school to paint playground markings **Implementation Complexity** Low Intervention components = Simple Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = More evidence needed Potential population reach = High Implementation complexity = Low **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = Low **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Ridgers, Stratton (2007); Ridgers, Stratton (2007) England	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the intervention elementary schools were exposed to the intervention. **High-Risk Population** High 5-10 year olds, Lower-income (target population) The schools in the study were located in one of the most deprived areas in the country (statistics not reported).	**Representative** High All children in the intervention elementary schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Complex Redesign of playground (markings and physical structures) to include three colored zones: sports, fitness/skills, and "chill-out" area COMPLEX: 1. Schools were encouraged to explain the aims of the zones to children during class time and reinforce aims during recess periods. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Redesign of playground, encouragement by school staff to use the playground areas Specialized expertise: Not reported Resources needed: Playground design plans, playground equipment, fencing, colored markings Costs: 20,000 English Pounds for renovations per school **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Physical Activity in Study Population Effectiveness = Effective for physical activity for study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** High Impact for Physical Activity in Lower-Income Children Effectiveness for high-risk populations = Effective for physical activity in lower-income children Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Dyment, Bell (2007); Dyment, Bell (2008) Canada	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided About half of the schools were Caucasian. The remaining schools were largely Aboriginal, Afro-Canadian, Indo-Canadian, Arabic, and/or Asian.	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided School ground greening including a diversity of natural and built elements (e.g., shelters, rock amphitheaters, trees, shrubs, wildflower meadows, ponds, grassy embankments, food gardens, art, seating areas, trails) **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	1. Almost half of the respondents (49%) reported that the school ground promoted more vigorous activity after greening compared to before (40% no change, 2% less activity, 9% unsure). 2. Respondents reported school ground greening projects dramatically changed the school landscape. Prior to greening, school grounds primarily consisted of asphalt, manicured grass, and play equipment. After greening, respondents reported that grounds included more shade trees (96% of respondents) and shrubs (87%) as well as rocks/ boulders (66%), wildflower gardens (65%), floral gardens (49%), butterfly gardens (41%), sand (38%), logs (38%), berms (31%), water features (7%), food gardens (27%), woodland habitats (35%), grassland habitats (20%), wetland habitats (10%), greenhouses (6%), art (25%), seating (81%), trails (22%), and composting (42%). 3. Respondents indicated that the redesigned grounds appeal to a wider variety of student interests (90%) and support a wider variety of play activities (85%). Respondents stated that green grounds promote more active (82%), more imaginative (83%), and more constructive (59%) play; more civil behavior (81%); better integration of physical activity into school life (77%); strengthened link between play and learning (82%); and exploration of the natural world (84%).
Author Willenberg, Ashbolt (2009) Australia	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 5-12 year olds, Urban 6182 children were enrolled at the 23 schools; culturally diverse, predominantly low socio-economic area; schools were government, independent, religious, and special development	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided Playground environmental factors including surface type and amenities (part of the 'fun 'n healthy in Moreland!' project) **Feasibility** Not Applicable **Implementation Complexity** Not Applicable	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	1. The focus groups indicated that children liked a mix of playground areas with different surfaces and open spaces. Children preferred soft surfaces to hard surfaces due to concerns about injury from falls, and preferred that hard surfaces be marked. Children preferred metal structures to wooden and disliked policies that limited use of fixed playground equipment to younger students. Children also believed that the provision of more sports equipment stimulated physical activity.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Haugh, Torsheim (2008) Norway	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 6-15 year olds (target population)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided Playground environmental factors including surface type and amenities (part of the 'fun 'n healthy in Moreland!' project) **Feasibility** Not Applicable **Implementation Complexity** Not Applicable Only cross-sectional data provided Availability of outdoor physical activity resources (e.g., sport fields, equipment, green space) at schools	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Physical Activity and Environment Policies - United States						
Author Williamson, Copeland (2007) No location specified	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All children at the 2 intervention schools were exposed to the school lunch changes and physical activity intervention. **High-Risk Population** Not Reported (for intervention population) 6-11 year olds 94.9% White, 2.4% African American, 2.7% other racial groups (evaluation sample)	**Representative** High All children in the intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component Wise Mind Study Physical activity component: Teacher supplies (bean bags, balls) to promote play during class time/recess, lesson plans for academic games involving the equipment <u>MULTI-COMPONENT:</u> School policies to modify school menus to include: 1. Five fruit and vegetable servings per day 2. <30% of dietary energy from total fat 3. <10% of dietary energy from saturated fat 4. 20 to 30 g fiber per day <u>COMPLEX:</u> 1. Family component: Newsletters, weight gain prevention website, school assemblies for families promoting healthy eating, increased PA/decreased sedentary behavior. 2. Posters promoting physical activity centers **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: School menu modifications, increased physical activity opportunities for students, family newsletters, website, school assemblies Specialized expertise: Trainers to conduct training for cafeteria staff in meal preparation (frequency and duration not reported) and training for teachers in healthy eating and exercise (6 sessions) Resources needed: Personnel (trainers, school staff), posters, handouts, menu boards, parent newsletter, physical activity equipment, resources for events, incentives, funds/ personnel to create/maintain internet program Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/obesity in the Study Population No Impact for Physical Activity in Study Population Effectiveness = Effective for overweight/obesity in study population, not effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	**School Food and Beverage Policies** <u>NUTRITION:</u> 1. After 18 months, the intervention group was consuming fewer total calories (-59 ± 13.3, d=0.55) and lower percentages of calories from total dietary fat (-41 ± 3.4, d=0.61), saturated fat (-17 ± 1.2, d=0.49) and protein (-11 ± 4.0, d=0.60). The dietary changes were determined primarily by changes in food selections.	1. Improvement in measures of depression, self-esteem and eating disorder symptoms were observed in both intervention and control groups (p<0.05).

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Durant, Harris (2009) Massachusetts, Ohio, and California	**Participation/ Potential Exposure** Not Applicable **High-Risk Population** Not Applicable Only cross-sectional data provided 12-18 year olds 56.5% White, 29.8% Black, 10.6% Hispanic, 3.1% other ethnicities (evaluation sample)	**Representative** Not Applicable **Potential Population Reach** Not Applicable **Potential High Risk Popluation Reach** Not Applicable	**Intervention Components** Not Applicable Only cross-sectional data provided Availability of policies and resources for physical activity in schools including: 1. Physical activity equipment in school 2. Supervised physical activities after school 3. Play areas and fields available after school hours 4. Days per week of physical education **Feasibility** Not Applicable **Implementation Complexity** Not Applicable Only cross-sectional data provided Availability of outdoor physical activity resources (e.g., sport fields, equipment, green space) at schools	**Population Impact** Not Applicable **High-risk Population Impact** Not Applicable **Sustainability** Not Applicable	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
School Physical Activity and Environment Policies - International						
Author de Barros, Nahas (2009); Nahas, de Barros (2009) Brazil	**Participation/ Potential Exposure** Participation = Not Reported Exposure = High All students attending evening high school classes in the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 15-24 year olds (target population) Percent White ranged from 24.7-61.0% (evaluation sample)	**Representative** High All children attending the evening classes were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component Saude na Boa project - School policy aimed at increasing the number of days/week that students accumulated 60+ minutes of moderate-to-vigorous physical activity (MVPA) by providing: 1. Bike racks 2. Physical education kits for PE teachers 3. Equipment for physical activity (e.g. balls, jumping ropes, weights) 4. Weekend active leisure activities (supervised trails or sports activities) MULTI-COMPONENT: 1. Healthy snack day - fruit was distributed once a week. COMPLEX: 1. Informational posters, newsletters and the Saude na Boa website (provided project information and health promotion materials). 2. Promotional materials (e.g., t-shirts, Frisbees, balls, water bottles) distributed at special occasions and events. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Bike racks, physical activity equipment, weekend active leisure activities, fruit distributed at school once a week, healthy school day, informational posters, newsletters and website, promotional materials distributed at special events Specialized expertise: Initial orientation and training workshops conducted by research staff, school staff training regarding healthy foods, and guidance for buying, cleaning and distributing the fruits during class breaks, 4-hour workshops every other week for physical education teachers (8 sessions) Resources needed: School personnel, resources for training and engagement activities, guest speakers, promotional materials, website, bike racks, fruits, physical education kit ($500 per school) Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Physical Activity in Study Population Effectiveness = Effective for physical activity in the study population Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach =More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Verstraete, Cardon, (2006); Verstraete, Cardon (2007) Belgium	**Participation/ Potential Exposure** Participation = Not reported Exposure = Not reported Unclear whether all elementary children at the schools received the intervention or only 4th and 5th graders. **High-Risk Population** Not Reported (for intervention population) 9-12 year olds (target population)	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Participation/ potential exposure = Not reported Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Complex School policy to increase physical activity (PA) that included: 1. Two 50 minute physical education classes per week supporting increased physical activity 2. Game equipment at lunch and recess 3. Extracurricular organized PA once per week during lunch and after school hours COMPLEX: 1. Health Education: 6 lessons and 3 repetition lessons to increase knowledge and healthy living by teaching skills such as goal-setting, time-planning, problem solving and self-talk. **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Physical education classes supporting increased physical activity, game equipment at lunch and recess, extracurricular organized physical activity, health education Specialized expertise: External physical education teachers to conduct extracurricular physical activity, one-on-one training for school physical education teachers (frequency and duration not reported) Resources needed: Physical education manuals, guidelines and sample lessons, game equipment for recess/lunch, materials for teacher trainings, trained physical education instructor for extracurricular physical activities Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Effective for overweight/obesity and physical activity for the total population Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. No gender differences were found on the accelerometer data, which suggests that the intervention effects were similar for boys and girls.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Reed, Warburton (2008); Naylor, Macdonald (2006); Naylor, Macdonald (2008); Naylor, Macdonald (2006); Ahamed, Macdonald (2007) Canada	**Participation/ Potential Exposure** Participation = Not reported Exposure = Low Target population = elementary school children Only 4th and 5th grade children enrolled in the intervention schools were exposed to the intervention activities (N=1084) **High-Risk Population** Not Reported (for intervention population) 9-12 year olds (target population) 46% East and South East Asian, 24% North Americans of European descent, 10% South Asian, 13% mixed and 8% other (evaluation sample)	**Representative** High All fourth and fifth grade students in the 7 intervention schools were exposed. **Potential Population Reach** Low Exposure =Low Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Complex Action Schools! BC – school policy to increase physical activity (PA) to 150 minutes per week by adding an additional 15 min/day of moderate to intense PA in addition to existing physical education classes (2 x 40 min per week) COMPLEX: 1. School Action Team – committee of school stakeholders developed and implemented a school action plan to increase physical activity through changes to the school curricula and environment. 2. Support team- developed and provided resources, training and on-going consultation to school staff. 3. School Facilitators – two elementary school teachers that provided support and advice to the School Action Teams and teachers on a weekly basis 4. Classroom Action Bin – storage bin provided to classroom teachers filled with physical activity equipment **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Additional physical activity sessions each week, school action team to change school curricula to support increased physical activity, support team to provide resources and ongoing training to staff, school facilitators to support action teams and teachers, classroom action bin with physical activity equipment Specialized expertise: Two 1-day trainings for all intervention classroom teachers, external facilitation to support intervention schools Resources needed: School staff support, school champion, physical activity equipment for the classroom action bins, teacher planning guide, resource directory, material for teacher trainings Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** No Impact for Overweight/ obesity in the Study Population No Impact for Physical Activity in the Study Population Low Impact for Physical Activity in Boys No Impact for Physical Activity in Girls Effectiveness = Not effective for overweight/obesity in the study population, effective for physical activity in boys, not effective for physical activity in the study population and girls Potential population reach = Low Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More Evidence Needed Implementation complexity = High **Sustainability** Yes The premier of British Columbia and the ministers of education, health, and finance announced a $14.5 million contribution, over 5 years, for the expansion of Action Schools! BC. An additional $500,000 was provided by the Ministry of Education for teacher training and to support school districts that enrolled in Action Schools! BC.	Not Reported	1. (n=288) There was no difference in academic performance scores between children attending intervention schools and usual practice schools at follow-up (-15.3; 95% CI= -41.8, 11.2, p=ns). 2. Systolic blood pressure in the intervention group decreased significantly (from 105 to 102) compared with an increase in the usual practice group (from 104 to 108), p<0.05. There was no difference for change in diastolic blood pressure. 3. Teachers in the intervention schools delivered approximately 60 more minutes of physical activity per week than teachers in the usual practice schools (+58.9 min/week, 95% CI= 25.4, 92.4)

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Van Beurden, Barnett (2003) Australia	**Participation/ Potential Exposure** Participation = Not reported Exposure = Not reported Unclear whether all primary school children received the intervention or only year 3 and 4 children. **High-Risk Population** Not Reported (for intervention population) 7-10 year olds (target population)	**Representative** Not Reported **Potential Population Reach** More Evidence Needed Participation/ potential exposure = Not reported Representativeness = Not reported **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = Not reported	**Intervention Components** Complex School policy to increase student physical activity (PA) and fundamental movement skills (FMS) during school hours <u>COMPLEX:</u> 1. Project teams established by the schools to select and customize policy and environmental strategies for their school 2. "Buddy program" - preservice teachers (3rd year education students) matched with generalist teachers to provide strategies, resources, and knowledge in increasing PA and FMS during physical education lessons 3. Professional development workshops for teachers 4. Project web site 5. Funding for PA equipment **Feasibility** Intervention Feasibility = High Policy Feasibility = High Intervention activities: Increased opportunities for physical activity and fundamental movement skills during school, project teams to customize policy and environmental strategies for the school, "buddy program" to increase access to resources and knowledge for teachers, professional development workshops, project web site, funding for physical activity equipment Specialized expertise: Day training for preservice and generalist teachers Resources needed: Money provided to schools to buy equipment ($AU 375), funds and personnel for trainings provided to teachers and "buddies," funds to create web site Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** More Evidence Needed Effectiveness = Effective for physical activity for the study population Potential population reach = More evidence needed Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. Logistic regression found that intervention schools spent more time on skill training (β=0.4143, z= 6.55, p<0.001), less time on fitness (β= -0.404, z=5.32, p<0.001), and games (β= -0.120, z= 2.14, p=0.016) and no change in time spent on management/ instruction (β= -0.002, z= 0.038, p=ns), compared to control schools.

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Taylor, McAuley (2006); Taylor, McAuley (2007); Taylor, McAuley (2008); Williden, Taylor (2006) New Zealand	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the intervention schools were exposed to the intervention. **High-Risk Population** Not Reported (for intervention population) 7-10 year olds (target population) 81.8% Caucasian, 17.3% Maori, 0.9% Pacific Islander Students were predominately white from middle-class backgrounds (evaluation sample).	**Representative** High All children in the 7 intervention schools were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** More Evidence Needed High-risk population = Not reported Representativeness = High	**Intervention Components** Multi-component APPLE project - School policy providing sport/ play equipment during school breaks (year 2) and community activity coordinators (0.5 FTE/ school) to encourage children's daily physical activity by increasing the variety/opportunities for physical activity during the school day. MULTI-COMPONENT: 1. Provision of filtered water coolers at school COMPLEX: 1. Classroom resources for teachers to facilitate short bursts of activity in class called 'snacktivity.' 2. Science lessons to promote fruit and vegetable consumption and highlight adverse effects of sugary drinks (year 2) 3. Healthy eating resources available to the intervention community (year 2) 4. Development of 'GoTri' card game **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Sport/play equipment during school breaks, increased variety and opportunities for physical activity using community activity coordinators, cooled water filters at school, short bursts of activity in class, science lessons promoting fruit and vegetable consumption, healthy eating resources, 'GoTri' card game Specialized expertise: Community activity coordinators to promote and facilitate increased physical activity Resources needed: Community activity coordinators, $500-$1000 for school equipment, GoTri cardgame, resources for "snacktivities," healthy eating resources, water filters Costs: Not reported **Implementation Complexity** High Intervention components = Multi-component Feasibility = High	**Population Impact** High Impact for Overweight/ obesity in the Study Population High Impact for Physical Activity in the Study Population High Impact for Sedentary Behavior in the Study Population Effectiveness = Effective for overweight/obesity, physical activity, sedentary behvavior Potential population reach = High Implementation complexity = High **High-risk Population Impact** More Evidence Needed Effectiveness for high-risk populations = Not reported Potential high-risk population reach = More evidence needed Implementation complexity = High **Sustainability** Yes One school found funding to retain their coordinator (at reduced level of 0.3 FTE). Several activities introduced or enhanced by the coordinators continued, including triathalons, cross-country training, line dancing, and active transport to school. One school reintroduced tackle rugby for boys and supervised swimming during lunch breaks to increase activity. A few schools enacted new school policies targeting healthy eating (reductions in access or types of foods available for purchase were the most common changes).	**Provision of Drinking Water in Schools** NUTRITION: 1. Intervention children consumed significantly fewer carbonated beverages (difference= 0.67 servings, 95% CI= 0.46, 0.98; p=0.04) and fruit juice or drinks (0.70 servings, 95% CI= 0.51, 0.97; p=0.03) compared to controls. 2. Intervention children consumed 0.8 more servings of fruit during 3 days compared to controls (p=0.01); no effect was observed for vegetable intake.	Not Reported

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
Author Cass, Price (2003) Australia	**Participation/ Potential Exposure** Participation = Not reported Exposure = High All children in the intervention school were exposed to the intervention. **High-Risk Population** High 14-18 year old girls (target population) 86% of girls in the school are from non-English speaking, mainly Middle Eastern and Asian backgrounds	**Representative** High All children in the intervention school were exposed. **Potential Population Reach** High Exposure = High Representativeness = High **Potential High Risk Popluation Reach** High High-risk population = High Representativeness = High	**Intervention Components** Complex School policy to support environment changes following the Health Promoting Schools Framework including: 1. Informal physical activity (PA) breaks 2. Facility improvement 3. New physical activity equipment 4. Free after-school activities for students COMPLEX: 1. Organizational component (e.g., student committees, health promotion officers) 2. Curriculum component (e.g., professional workshops, physical activity curriculum resources) 3. Social environment component (e.g., peer physical activity leaders training, sports/activity classes, whole school physical activity focus days) 4. School/Home-Community links (e.g., parent newsletters, health education classes for parents, formal funding agreement between school and area health service) **Feasibility** Intervention Feasibility = Low Policy Feasibility = High Intervention activities: Informal physical activity breaks, facility improvement, new physical activity equipment, free after-school activities for students, student committees and health promotion officers, curriculum development activities for teachers, peer physical activity leaders, sports/ activity classes, whole school physical activity days, parent newsletters, health education classes for parents, formal funding agreement between school and area health service Specialized expertise: Trained health promotion officers to drive the project Resources needed: Schools and cooperating faculty to conduct the intervention, trained health promotion staff, materials and contractors for facility improvement, new physical activity equipment, materials for trainings and professional workshops, physical activity curriculum resources, parent newsletters, materials for parent health education classes Costs: Not reported **Implementation Complexity** High Intervention components = Complex Feasibility = High	**Population Impact** High Impact for Physical Activity in the Study Population Effectiveness = Effective for physical activity for girls (study population) Potential population reach = High Implementation complexity = High **High-risk Population Impact** High Impact for Physical Activity in Girls from non-English Speaking Homes (minority) Effectiveness for high-risk populations = Effective for physical activity for girls in non-English speaking homes (minority) Potential high-risk population reach = High Implementation complexity = High **Sustainability** Not Reported	Not Reported	1. Teachers reported an increase in availability of organized lunchtime physical activities for students (2-3 times a week) from baseline to follow-up (67% compared to 20%, $\chi 2 = 4.79$, $p<0.05$). 2. Teachers reported increased utilization of the gymnasium, fitness lab, playing fields and indoor and outdoor playing spaces.