

Policy Area: After School Programs

Specific Policy: Ensure quality nutrition and physical activity components in all Georgia after school programs and/or increase the number of elementary and middle school children in Georgia participating in after school programs.

Background

After school programs are an important opportunity address the childhood obesity epidemic. Over 70% of Georgia’s school-age children live in families where both parents work, so that up to 1 million school-age children in Georgia may spend time away from their parents between 3PM and 6PM. After school programs can play an important role in fostering better eating and activity habits for children and their families. After school programs serve many children and youth most at risk for being overweight – specifically minorities and those in poverty – and community-based after school programs often have close relationships with parents and the community at large, providing a venue for broader public education on healthy eating and physical activity.

A recent survey of Georgia parents by the Georgia Afterschool Investment Council (GAIC) found that roughly half a million Georgia children do not participate in any after school programs or activities. The national America After 3 PM survey found that 21% of Georgia's K-12 youth are responsible for taking care of themselves after school, and 31% of Georgia youth K-12 now in self-care would participate if appropriate and affordable after school options were available. Parents of children not currently participating named “improved physical activity” as one of the top benefits they would expect from after school program participation. Thus, high quality after school programs might also attract children with after school care arrangements other than self-care.

The distribution of after school programs in the state is unequal. Some areas have a large number of programs to choose from, and some children may be involved in more than one program. In other places, especially rural areas, few if any programs exist. Parents may be unaware of available programs or unable to afford them. The America After 3 PM survey estimated that 30% of non-participating children in Georgia would participate if a quality afterschool program were available in their community. Non-participating African American and Hispanic children were even more likely than others to say they would participate in an afterschool program if one were available; 53% of African American parents and 44% of Hispanic parents said their child would participate if a program were available. Based on Georgia’s K-8 demographics, we estimate that 55% of Georgia’s K-8 children would participate in high quality afterschool programs if they were available/affordable in their communities.

After school and summer program providers may lack the time, skills and tools they need to provide high quality physical activities and nutrition education. Best practice information and training can support after school program providers to integrate meaningful physical activity and nutrition into their programming. The Georgia School Age Care Association (GSACA) has defined best practices related to physical activity and nutrition and has also developed a toolbox and training program to help after school providers foster better eating and activity habits for the children they serve.

Funding for existing after school programs in Georgia comes primarily from federal sources, including federal

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Temporary Assistance for Needy Families (TANF) dollars and the 21st Century Community Learning Centers Program (21CCLC). External sources may contribute matching dollars, including private and local funds. There are currently no state dollars targeted to after school programs in Georgia.

Description

We identified three evaluation studies of after school programs with relevance for Georgia that showed an impact on BMI or percent body fat in elementary or middle school children. Two (Georgia FitKids and Youth Fit for Life) evaluated specific nutrition and physical activity curricula, while the third (Yale Study of After School Time) compared children in after school programs to those not in programs. After school programs included the Yale study were not implementing a specific N&PA curriculum but included snack time and supervised recreation; as a group they scored as slightly above-average programs on the School Age Care Environment Rating Scale (SACERS), a widely-used quality scale for after school programs.

Population Affected

Younger children are much more likely to be in afterschool programs than are older children. In the American After 3PM survey, ~90% of children participating in after school programs were K-8. Similarly, 95% of 21st Century Community Learning Center programs serve elementary and middle school students. Not only are most after school programs not designed for older youth, but there is scant data on the impact of after school program participation on obesity among high school age youth. Therefore, we have limited the potential effects of after school program participation to elementary and middle school children in Georgia.

Costs

Cost estimates for after school programs vary widely. One national study found estimates ranging from \$449 to \$7,160 per child per year (median ~\$2000). This variation is attributable to differences in program characteristics, methods, sample sizes, and how costs are calculated—for example, whether in-kind resources are taken into account, and whether startup, operating, and system-building costs are included.

Georgia has allocated \$14 million in federal TANF funds to the Department of Human Resources (DHR) for community-based afterschool services. Matching funds from external sources (no state dollars) bring the total budget for the program to \$42 million per year. The DHR Afterschool Services Program serves 23,000 children, which averages to a cost of approximately \$1,826/child/yr. Cost-effectiveness evaluation of the Georgia FitKid program estimated net intervention costs at \$317, or \$956 for the intervention minus \$639 for the cost of usual after-school care.

A new study (just released in January 2009) looked at the full costs of *quality* afterschool programs based on data from 111 programs distributed across six cities (Boston, Charlotte, Chicago, Denver, New York and Seattle). The programs studied were varied in their focus, content, location, staffing, management and hours of operation. All were required to pass a quality screen designed to identify established, high-capacity programs. The study collected detailed information on the full cost of quality programs, including out-of-pocket

expenditures and in-kind resources, including space. This study found that programs serving elementary and middle school children cost an average of \$24 “per slot” per day during the school year (ranging from \$14 to \$31 a day) and \$32 during the summer (ranging from \$21 to \$36 a day). Summer programs, in general, were more costly per day than school-year programs because they operated more hours per day. Staff costs were the primary cost driver for the programs studied. These results, if annualized over an entire year, suggest that the full cost of *quality* afterschool programs is roughly \$6,000 per slot.

After school programs may have additional benefits beyond obesity reduction, such as improved school performance, higher graduation rates, lower teen pregnancy, lower substance use, and lower crime, but these “side benefits” are not included in the model.

Delays in Impact

With appropriate funding, coordination and technical support, Georgia after school programs could implement quality nutrition and physical activity components quickly and effects on children’s energy balance would be felt almost immediately. However, there will be an unavoidable “phase-in period” to implement nutrition and physical activity in all existing Georgia programs, and also in fulfilling the unmet demand (as currently estimated) for new programs.

Unintended/negative consequences

After school programs are increasingly subjected to similar pressures as schools and are being pushed toward focusing on academic achievement at the expense of other activities. If programs are expanded without attention to the quality of nutrition and physical activity components then the opportunity to have an impact on childhood obesity could be lost. To ensure the hoped for health impacts, expansions in after school access must be accompanied by feasible and relevant nutrition and physical activity standards, along with training and technical assistance for providers.

Assumptions

- We assume that the impact of after school programs on children’s nutrition and physical activity in Georgia will be felt primarily by children K-8.
- GSACA estimates that no more than 50% of after school programs have nutrition and physical activity (including outdoor play, but typically not daily); we assume, as a plausible baseline, that 33% of Georgia after school programs have an appropriate nutrition and physical activity component. Approximately 24% of Georgia children K-8 are currently involved in after school programs. Our assumption that 33% of these have appropriate physical activity and nutrition components implies that only 8% of Georgia children K-8 currently participate in programs with the potential to reduce obesity.
- GSACA estimates that the “dose” of after school received by a typical ASP participant is 4 days per week during the school year because some programs are available on selected days of the week, and even when programs are available 5 days per week, children may not attend every day.

- Based on estimates from the three studies reviewed above, we assume that the mean impact on children’s energy intake and expenditure of after school programs with quality nutrition and physical activity components will be approximately **-27.0 kcal/child/day**, regardless of the specific nutrition and physical activity curriculum used.
- We assume a delay of 5-6 years to implement nutrition and physical activity in all existing Georgia programs, and/or to fulfill the unmet demand for new programs that include appropriate nutrition and physical activity components.

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Georgia Afterschool Investment Council

- Strictly the Facts: After School in Georgia (2008)
- Critical Need: Georgia’s Parents Speak Out About Afterschool (September 2008)
- The Current State of Afterschool in Georgia - Building a Strong Foundation (January 2007)

Georgia School Age Care Association

- Childhood Obesity and the Role of After School Providers in Fostering Better Eating and Activity Habits
- Best Practices for Physical Activity and Nutrition
- After-School Health & Physical Activity Self-Assessment Tool

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Policy Area: Limitations on a la Carte Lunch Options in Public Schools

Specific Policy: Increase the number of school districts in Georgia that restrict the availability of a la carte lunch options by creating state guidelines, beyond those of the USDA, on sales and availability in Georgia schools.

Background

Despite public disagreement over whether obesity is a public health issue or personal problem, a majority of people believe schools share a major part of the responsibility to address obesity in children—according to national surveys (Fried & Simon 2007). The National School Lunch Program (NSLP) is a federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. The School Breakfast Program is a similar, but much smaller, federal program. The NSLP was created in 1946 to “safeguard the health and well being of the Nation’s children”, partly as a matter of national security: During WWII, a third of men rejected from military services suffered from nutritional deficiencies (Fried & Simon 2007).

Virtually all public schools and over 80% of private school participate in the NSLP. Schools receive cash subsidies and commodities from the U.S. Department of Agriculture (USDA) for each meal served. In return, they are expected to meet nutritional requirements and provide free or reduced-price lunch to eligible children. Nationally, the program serves 29 million school children every day at a cost of over \$7 billion per year. As of FY 2008, ~1.3 million Georgia children were participating in the NSLP.

The term “competitive foods” (CF) is often used to refer to all foods and beverages available and sold in school except for the regular meals provided through the national school lunch and breakfast programs. Regulations on CF are minimal, and most are not under the authority of the USDA (chips, ice cream and cookies, for example). Regulations primarily concern Food of Minimal Nutritional Value (FMNV), defined as foods that provide less than 5% of the Reference Daily Intake per serving for each of eight specified nutrients. The eight nutrients are protein, vitamin A, vitamin C, niacin, riboflavin, thiamine, calcium and iron. Foods of Minimal Nutritional Value include soda water, water ices, chewing gum, hard candy, jellies and gums, marshmallow candies, fondant, licorice, spun candy, and candy coated popcorn. Schools participating in the NSLP may not serve FMNV at lunch. However, many schools across the nation fail to adhere to the federal guidelines, and the USDA has few regulatory or enforcement options (Fried & Simon 2007).

CF sales in schools are implicated in the increases in childhood obesity and CF availability has been increasing nationwide, according to a Robert Wood Johnson Foundation study (RWJF 2007). CFs are readily available to nearly all school children. The Government Accountability Office surveyed a random sample of the 80,000 public schools nationwide that participate in the NSLP and found that nine out of 10 schools sell CF, with most sales occurring in middle and high schools; specifically, 83 percent of elementary schools, 97 percent of middle and junior high schools, and 99 percent of high schools sold CF through one or more sources including á la carte cafeteria lines, vending machines or school stores (GAO 2005). A CDC survey of states found 83% of public secondary schools allow students to purchase foods and beverages from vending machines or at the school store or snack bar; in Georgia, 87% of schools allowed such sales (CDC 2008). The proportion of elementary schools in Georgia that sell CF is unknown.

As of April 2005, 28 states including Georgia have made efforts to restrict the sale of CF beyond USDA regulations (GAO 2005). Most state policies restrict specific competitive foods (but not all competitive foods) and restrict such foods only school meal times, rather than throughout the day (GAO 2005). Five states have attempted to make broad changes to the competitive food environment (GAO 2005). A number of states have attempted to set nutritional standards on CF using a variety of legislative and regulatory mechanisms (Fried & Simon 2007). However, it is unclear how and to what extent states and localities are monitoring compliance with restrictions on CF in schools (GAO 2004).

All 190 school districts in Georgia are required to submit Wellness Policies to the State Department of Education. However, there is a great variance in what schools choose to set as policies on CF, such as foods served in á la carte menus, school stores and snack bars. Many schools are silent on the issue of CF. Georgia is also without state guidelines on CF sales. According to the Georgia Department of Education, some Georgia schools choose to regulate CF through á la carte sales and restrictions on vending machine purchases, but there are no state level guidelines on CF sales.

Description of Evidence

In a recent study of competitive food purchases (specifically, purchase of á la carte options during lunch) and their impact on energy and nutrient intake among sixth graders in Franklin County, Kentucky, 33.6% of students purchased CF (Templeton 2005). Lunchtime nutrient consumption was 20% higher among those who purchased CF (634.0 ± 14.9 kcals/student/lunch) vs. those who did not purchase CF (530.0 ± 8.9 kcals/student/lunch). In addition, fat intake among children who purchased CF was 32% higher and median intakes of vitamin A and calcium were 32% and 15% lower than among children who didn't.

Delays in Impact

Developing and implementing policies regarding competitive food sales would constitute the primary delay for this intervention. Benchmark policies exist that could be adopted and adapted by schools, but implementation would take time. We estimate a 5 to 6-year delay due to the time required to develop and implement policies in all Georgia schools. Once the policies are in place, the effects would be immediate.

Population Affected

Access to CF increases in higher grade levels (Finkelstein 2008), and most studies of CF and their impact have been conducted among middle school and high school student populations. In a study of 40 California public secondary schools, high school students were offered a wider variety of CF items (RWJF 2006). According to one estimate, adolescents consume 35% to 40% of their daily calories at school (Fried & Simon 2007).

Finkelstein (2008) and colleagues found no relationship between their calculated food environment summary score and the percentage of students certified for free or reduced-price lunches, or the percentage of racial/ethnic minority students. However, in a study of 209 middle and high schools in Utah, Nanney et al (2008)

found that schools with highest free and reduced-price lunch enrollment were more likely to allow the purchase of unhealthy snacks during lunchtimes than schools with low enrollment (28.4% vs 7.6%, P=0.01).

Costs

One argument that is frequently raised against eliminating CF is that they generate revenue for schools. However, a recent review suggested that policies to reduce the consumption of CF can be effective while at the same time *increasing* food sale revenue (Fox 2005). Certainly, there will be costs associated with implementing competitive food policies, including communication for parents and training for school staff. However, since the evidence suggests that these policies increase food sale revenues as often as not, and are consistently profitable, we assume that this intervention will be cost-neutral, if not profitable, for schools.

Unintended/negative consequences

A recent review of federal, state and local attempts to regulate the school food environment provides a detailed analysis of the unintended consequences and policy resistance that have followed in the wake of previous attempts to control the school food environment (Fried & Simon 2007). However, if we assume that an effective state policy is put in place and effectively enforced, then the most likely unintended or negative consequences are that schools may encounter resistance from some students and parents and/or that children may compensate by eating more food and/or less healthy food in their home environments.

Assumptions

- We assume that consumption of competitive foods at school is independent of BMI category.
- We assume results for Franklin County, Kentucky, 6th graders can be extrapolated to all Georgia middle and high school students.
- Among Georgia secondary schools (middle, junior high, and senior high schools with one or more of grades 6–12) 87% currently sell CF. Therefore, we assume that 87% of Georgia middle and high school students currently have access to these foods during the school day.
- Based on the Templeton study, we assume that ~34% of middle and high school students in schools that sell CF will choose to purchase these foods on any given day. The Templeton study included only 6th graders, and it is likely that purchase rates would be higher among high school students because they have more of their own money and tend to be offered a wider array of options. However, in the interest of a conservative estimate, we assume the same rate for both groups.
- We assume the Templeton results apply to all students, regardless of bag lunch status. In the Templeton study, about 25% of students at the schools in the study brought lunch from home and were excluded from the study. Since students who bring a bag lunch may have access to and purchase á la carte options, we believed they could also benefit from a policy that removes competitive foods.
- Templeton found an energy intake differential of 104 kcals per student per lunch among those who purchased CF. Annualized over a calendar year, this difference becomes **-51 kcals per student per day** (104 kcals*(180 days in the school/365).

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Policy Area: Reimbursement for Medical Nutrition Therapy by Care Management Organizations

Specific Policy

Implement consistent coverage and appropriate reimbursement for intensive Medical Nutrition Therapy (MNT) for overweight and obese children who are clients of Medicaid, including their families.

Background

Much has been written about the challenge of addressing pediatric obesity in the primary care setting due to the lack of reimbursement for essential management and treatment services such as dietary counseling often called "Medical Nutrition Therapy" (MNT). MNT is an essential, cost effective component of comprehensive health care services and allows children, adolescents and adults with obesity to improve their health and quality of life by receiving dietary guidance and nutrition counseling. MNT can improve consumer's self-management of his/her weight-related behaviors, and increase productivity and satisfaction levels through decreased doctor visits, hospitalizations and prescription drug use (American Dietetic Association, On-line: www.eatright.org). In 2007, the Expert Committee on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity recommended a staged approach to prevention and treatment that includes "...implementing a system for [patient] evaluation; by identifying resources, such as pediatric dietitians,...and by identifying community resources and referral centers, if available" (Barlow et. al., p. S182).

Care Management Organizations (CMOs) in Georgia serve the Medicaid population. WellCare, AmeriGroup and Peach State are the three providers. The CMOs have not worked with their providers to implement the expert committee recommendations on pediatric obesity in the primary care setting to ensure affected children and their families are experiencing best practice for obesity management. However, this issue will be addressed by the Department of Community Health in December 2008.

Data suggest that MNT with the family can decrease body mass index in overweight and obese children. However, this is not being done in Georgia's CMOs in a consistent manner. There are three issues of particular concern:

1. CMOs are not required to provide reimbursement for MNT which would promote and/or encourage physicians to refer obese patients to dietitians for more intense counseling than can be provided in the primary care setting.
2. There is not a consistent and relatively easy process within the three CMOs for dietitians to become approved providers.
3. The allowed hourly reimbursement amount does not adequately cover a nutrition consulting session.

Reimbursement codes exist for individual and group MNT (e.g., codes 97802, 97803, and 97804). Once a primary care visit is completed, these codes can be used for subsequent visits with a dietitian.

Description of Evidence

In 2007, a study combining office-based motivational interviewing with dietary counseling found that pediatric patients receiving MNT had decreases in BMI at a 6-month follow-up of 0.6, 1.9, and 2.6 percentiles in the control, minimal and intensive groups, respectively (Schwartz et al.). In addition, there are positive impacts to be gained from engaging the family (vs. just the child) in therapy; these include physiological changes such as

mean BMI, body fatness and physical fitness, as well as behavioral changes such as parental modeling and physical activity (Flodmark et al.; Dietz et al.).

Schwartz, et al. excluded extremely obese children from their study but did not specify a rationale for doing so. It is possible they felt this group of children required immediate medical attention and therefore could not be ethically assigned to a “no treatment” group. There is no reason to expect that MNT would be less effective with extremely obese children than with obese or overweight children.

The Schwartz study had a high dropout rate; 50% of children who began MNT completed the study.

Delays in Impact

Intensive MNT can reduce BMI by 2.6 percentiles in children at a 6-month follow-up. Therefore, results can be achieved relatively quickly, compared to some other interventions.

Population Affected

Overweight, obese and extremely obese children who are clients of Medicaid; normal weight are excluded.

Costs

Reimbursement for a dietitian to conduct MNT would likely cost \$45-55 per hour while reimbursement for a primary care physician is approximately \$100 per hour.

Unintended/negative consequences

Primary care offices might see a decline in revenue because follow-up visits would be with dietitians or behavioral health specialists.

Assumptions

- The MNT intervention does not apply to children who are normal weight because they would not be eligible to receive MNT.
- An adequate supply of nutritionists is available throughout the state to meet the need.
- Intensive MNT is medically appropriate for all overweight and obese Medicaid-eligible children.
- At least 50% of children who begin MNT complete it, as reported by Schwartz, et al.
- BMI changes for children who do not complete MNT will be comparable to BMI changes among children who do not participate in MNT.
- Maximum expected impact will be seen within six months.
- Changes in BMI are sustained after the intervention is completed.
- Participants aged 3 - 7 years are adequately represented by a hypothetical average child of the mid-point age of 5 years, 6 months, who has 50th percentile height (44.3 inches).
- The average change in pounds represented by a one percentile unit change in BMI between the 85th and 95th percentiles is 0.38 pounds per percentile unit. (95th percentile weight = 51 lbs. 85th percentile weight = 47.2 pounds. $51 - 47.2 = 3.8$ pounds per 10 percentile units or 0.38 pounds per percentile unit).
- The mean impact of MNT on affected children's energy balance will be **-5.5 kcals/child/day**.

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Policy Area: Preschool Programs

Specific Policy: Increase the number of licensed preschool programs (e.g., private, church-based, and Head Start Centers) that incorporate a nutrition education and physical activity component into their existing curriculum.

Background

The preschool population defined as birth through 5 represents a critical stage in a child's development from the physical, mental, emotional and social perspective. It includes a period of significant brain development that can impact the rest of their lives, hence the expression "the first years last forever". The rising trend in preschool obesity therefore represents a critical public health issue. Overweight preschoolers are at increased risk of being obese adolescents compared to non overweight preschoolers, and may suffer short and long term health problems as a result.

Lack of physical activity and poor eating habits are important contributors to the development and maintenance of childhood overweight. There is also some evidence that integrating movement into everyday learning experiences can enhance learning outcomes in young children. Early childhood education programs represent an ideal setting to promote physical activity and healthy eating in young children, where children spend 4 to 8 hours/day, 5 days per week.

There are currently 3,200 licensed day care centers in Georgia with a total maximum capacity of 380,000 of preschool children aged 3-5 years old. There are 5,300 licensed family day care centers in Georgia with a total maximum capacity of 31,800. Actual enrollment is not known. There is an Early Head Start and HeadStart program in 157 out of 159 counties in Georgia. These programs serve just over 26,000 children from 0-5 years. Seven and a half percent (7.5%) or 702,295 Georgians are under the age of 5. Based on these figures approximately 437,800 or 62% of Georgia's children aged 0-5 participate in some type of preschool program. In the United States, 56% of all children between the ages of 3 and 5 years attend preschools or similar early childhood education centers.

There is a common perception of parents/caregivers that preschool-age children are generally very active and that extra effort or activities during the preschool hours are not needed. However, several studies indicate that this is not the case. Pate et al (2008) recently reported that preschool age children (private, church-based and HeadStart) were only moderate-to-vigorously active during less than 3% during observed intervals and were sedentary during more than 80% of the observation intervals. They also determined that the type of preschool was a strong predictor of physical activity levels. Currently the Georgia Department of Early Care and Learning requires that child care centers provide one and a half hours of "some type of activity". The quality of early child care assessed in terms of health and safety and whether they are accredited by the National Association for the Education of Young Children (NAEYC).

The number of quality early child care programs is not known.

Challenges that preschool programs face include lack of time to incorporate physical activity into an already overcrowded curriculum, lack of trained or motivated staff or teachers on physical activity or healthy eating, perceived cost, lack of space, and parental support in the home.

The Georgia Department of Early Care and Learning and Georgia Head Start Association are the two main agencies in Georgia overseeing or providing preschool programs and services. Preschool obesity is a priority issue for both. Leadership within the Georgia Department of Early Care and Learning, with support from the Georgia Department of Human Resources, Division of Public Health, are currently reviewing the rules and regulations to identify changes to support healthy eating and physical activity.

Description of Evidence

A randomized controlled trial of the HipHop to Health, Jr. curriculum, a culturally proficient dietary/physical activity program, was conducted in 12 Head Start preschool programs in Chicago, Illinois (Fitzgibbon 2005). Lesson plans incorporated two major components: (1) a 20-minute lesson that introduced a healthy eating or exercise concept with an activity and (2) 20 minutes of ongoing physical activity. Children participated for 14 weeks (40 minutes, three times weekly), and their body mass and dietary intake were measured at baseline, immediately post-intervention and at 1 and 2 year follow-up intervals. The intervention was effective in reducing increases in BMI in high-risk minority preschool children. Reductions in body mass increases were sustained through the 2-year follow-up.

Population Affected

The preschool population typically includes 3-5 year olds but may also include children from birth to 2 years of age. Most studies however target 3-5 year olds.

Costs

The cost of preschool programs range from \$200-\$280/week per child (\$10,400-14,560/child/year) depending on the age of the child and type of child care center. Head Start, a federally funded program targeting low income families costs \$7000/child/year. (A large or 100% of this is paid through the federal government).

The cost of adding a nutrition education and physical activity component would include cost of purchasing a curriculum (~\$100) or adapting an existing curriculum, training (initial and ongoing), and monitoring and evaluation

Delays in Impact

Full implementation of this policy across the state would not be immediate because implementation would require curriculum development or adaptation, staff/teacher training, etc. One implemented, however, nutrition education and daily physical activity into preschool curriculum would have immediate impact on children's health.

Assumptions

- The impact of preschool programs on children's nutrition and physical activity in Georgia will be felt primarily by children 3-5 years of age.
- High quality preschool programs could reach all children currently attending preschool, which is 62% of Georgia preschool-age children.
- Based on the Fitzgibbon study, we assume that children participating in preschool programs that incorporate an effective physical activity and nutrition education component would realize a **-14.5 change in kcal/day** compared to children in programs with the standard preschool curriculum.
- The HipHop to Health, Jr. curriculum will be at least as effective for the general population as for the high-risk minority children on which it was tested.
- It will take 5-6 years to implement nutrition and physical activity education in all Georgia preschool programs.

Resources

Personal Communication

Georgia Department of Early Care and Learning, Bright from the Start

Jackie Romaine, Director of Nutrition Services

Kay Hellwig, Director of Child Care Services

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Policy Area: Safe Routes to School

Specific Policy: Increase the proportion of school-aged children who can safely walk or bicycle to school.

Background

Approximately 4% of Georgia children 5-15 years of age walk to school most days of the week. Distance and safety are two of the most commonly cited reasons for children not walking to school. Safety from traffic dangers can be improved by providing crossing guards and making other changes to the routes children use to get to school.

Currently, about 8% of elementary school children (grades k-5, approximate ages 5-10), 4% of middle school students (grades 6-8, approximate ages 11-13), and 2% of high school students (grades 9-12, approximate ages 14-17) live close enough and can reach school using streets with minimal traffic hazards (speed limit ≤ 25 mph) (Falb et al 2007 and Bricker et al, 2000).

If traffic hazards can be reduced by using traffic guards and other methods (e.g., traffic slowing techniques such as speed bumps or other structural changes), the proportion of children who could walk to school would increase to 29% for elementary school children, 11% for middle school, and 6% for high school students (Falb et al, 2007).

Assumptions

- Children, regardless of age, who walk to school will spend 20 minutes walking to and 20 minutes walking from school 4 days per week for 30 weeks during the school year.
- The MET value for walking for children is 3.5 METs.
- The MET value for sitting in a car for children is 1 MET.
- The probability of walking is independent of weight category.
- The weight of each student is equal to the mean weight (in Kg) of his or her age-sex-weight-category-specific group.
- The effects of a concerted effort to change student and parent behavior and to assure that pathways to school are safe from traffic could be fully implemented over a 10 year period, the improvements would be linear across the 15 years, and the proportion of children who walk to school would increase from 8% to 29% for elementary school children, 4% to 11% for middle school children, and 2% to 6% for high school youths.
- Efforts to place schools in residential neighborhoods would have no effect for 10 years, would require 40 years to reach full effect, and would raise the final proportion of students who could walk to school to 60% for elementary school children, 40% for middle school children, and 20% for high school youths.

Change in caloric balance

We estimated changes in daily caloric expenditure brought about by increases in the proportion of school-aged children who walk to school. The caloric (for this exercise, kilocalories of energy are called calories, as is done in usual conversation) expenditure is calculated using the formula:

Calories/day = (minutes of activity/day)*(MET value of activity)*(3.5)*(weight in kg)/200

Extra calories/day = MET value of new activity – MET value of old activity (in this case, MET value for walking – MET value for sitting in car)

Minutes of activity/day = (20 + 20minutes/day)*(4.5 days/wk)*(36wks/yr)*(1yr/365days) = 18min/day

Calories/day = (18min/day)*(3.5 METs – 1.0 MET)*3.5*(weight in kg)/100 = 18*2.5*3.5*Kg/200 = 0.788*Kg

Note, 20 Nov 08. The changes made include reduction from 15 to 10 years for the time to full implementation of traffic safety changes; increase from 30 to 36 in the number of weeks during the school year; and increase from 4 to 4.5 in the average days walked to school for those who can walk to school.

References

Falb et al, Estimating the proportion of children who can walk to school, Am J Prev Med 2007;33:269-275.

Bricker et al, School transportation modes---Georgia, 2000, MMWR, 2002;51:704-706.

Policy Area: School Physical Education

Specific Policy: Increase minutes of physical education and improve the quality of PE activities that children engage in at school.

Summary of Analysis

School PE is a common and good place for children and youth to achieve a significant portion of the daily physical activity they need for good health. The PE activities also help maintain a healthy body weight. Both the time spent in PE and the vigor of activity in PE influence energy expenditure.

In Georgia, elementary school students (grades K-5) are supposed to receive 150 min/wk of PE and high school students (grades 9-12) are supposed to receive ½ credit unit of PE and ½ credit unit of health during their four years. There are no requirements for PE for middle school students (grades 6-8) however health/PE courses must be made available. Several national organizations have recommended that middle school children should receive 225 min/wk of PE.

Not all schools actually require or provide the opportunity for children to receive the recommended amount of PE time, and not all PE classes assure that the children engage in activities that are sufficiently vigorous. Both the time spent in PE and the quality of the PE provided can be influenced by state-wide policies.

Information about the amount of time that Georgia children actually spend in PE and the vigor of their activities during PE is sparse. The following estimates are based on information that is available. Where data are absent, reasonable assumptions have been made. The process is described in detail, below.

We investigated, for the following policy changes, the change in daily caloric expenditure brought about by changes in the minutes of PE every week and improvements in the quality of PE activities:

1. The amount of time spent in moderate to vigorous physical activity (MVPA) during existing elementary, middle, and high school PE will be increased from an estimated 40% of time to 50% of time.
2. All elementary school students in Georgia will participate in a minimum of 150 minutes per week of PE, both without and with an increase in MVPA.
3. All middle school students in Georgia participate in a minimum of 150 minutes per week of PE, both without and with an increase in MVPA.
4. All middle school students in Georgia participate in a minimum of 225 minutes per week of PE, without and with an increase in MVPA.
5. All high school students will participate in 2 credit units of PE during their 4 years in high school, without and with an increase in MVPA.

The change in energy balance (calories/day) brought about by these policy changes are displayed in Table 1.

Table 1. Estimated population increases in daily energy expenditure among Georgia elementary, middle, and high school students produced by PE-related policy changes		
Policy – elementary schools	Elementary	
More MVPA added to current time	0.005*Kg	
150 min/wk of PE (current rate of MVPA)	0.190*Kg	
MVPA added to 150 min/wk of PE (0.190*Kg already in)	0.008*Kg	
150 min/wk and more MVPA added simultaneously	0.198*Kg	
Policy – middle schools	Middle	
More MVPA added to current time	0.005*Kg	
150 min/wk of PE (current rate of MVPA)	0.235*Kg	
MVPA added to 150 min/wk of PE (0.190*Kg already in)	0.008*Kg	
150 min/wk and more MVPA added simultaneously	0.243*Kg	
225 min/wk of PE (current rate of MVPA)	0.475*Kg	
MVPA added to 225 min/wk of PE (0.475*Kg already in)	0.012*Kg	
225 min/wk and more MVPA added simultaneously	0.487*Kg	
Policy – high schools	HS males	HS females
More MVPA added to current time	0.003*Kg	0.002*Kg
2 credit hours	0.017*Kg	0.100*Kg
MVPA added to 2 credit hours (*Kg already in)	0.003*Kg	0.003*Kg
2 credit hours and more MVPA added simultaneously	0.020*Kg	0.104*Kg

Background, elementary and middle school students

Time estimates

For good health children should participate 60 minutes per day in moderate to vigorous physical activity (MVPA). School physical education (PE) classes are expected to provide children opportunities to accumulate some of the recommended daily MVPA. Information about the amount of time Georgia children currently spend in school PE is scant. The estimates (below) are based on information included in two sources: the Georgia Student Health Survey and the Georgia Youth Fitness Survey. Little information also is available about how active children are during PE.

Data from the Georgia Student Health Survey (similar to the national YRBS) indicate that in 2005 approximately 36% of middle school students reported that they had daily PE. Assuming 50 minute class periods, these 36% of students would spend approximately 250 minutes per week in PE. Dividing the remaining 64% of children into two equally sized groups (32% each), and assuming one of the groups had PE every other day and the remaining had PE once per week, the average time spent in PE per week would be approximately 146 minutes per week. ($146 = .36*250 + .32*125 + .32*50$)

The Georgia Youth Fitness Survey provides information about the number of minutes per week of required PE in 5th grade (elementary) and 7th grade (middle) schools. For example, an estimated 32% of schools do not require PE for 5th grade students and 58% of schools do not require PE for 7th grade students (Table 2).

Table 2. Elementary and Middle School Table 1. Estimated average min/wk of PE, from GYFA data

5 th Grades (Elementary Schools)			
Requirement	Estimated min/wk of PE	Proportion of schools	Contribution to average weekly minutes (product of min/wk of PE and proportion of schools)
No requirement	0	0.32	0
1-89 min/wk	50	0.31	16
90-149 min/wk	100	0.28	28
150+ min/wk	150	0.09	14
Est. average min/wk			58
7 th Grades (Middle Schools)			
No requirement	0	0.58	0
1-89 min/wk	50	0.14	7
90-225 min/wk	120	0.13	16
225+ min/wk	225	0.15	34
Est.average min/wk			57

Thus, the estimate from the Georgia Student Health Survey (146 min/wk) and the Georgia Youth Fitness Survey (57-58 min/wk) differ considerably. Lacking reason to select one over the other, *we have assumed that the current 100 min/wk is the current average for students during the school year.*

If actions are taken such that all elementary and middle school students receive 150 min/wk of PE (the amount currently “required” in GA for elementary school students), the average weekly PE would increase by 50 min/wk (from 100 to 150 min/wk) for elementary school students and by 62 min/wk (from 100 to 162) for middle school students (Table 3).

Table 3. Estimated average min/wk of PE assuming all elementary and middle schools provide 150 min/wk, the current requirement for elementary schools

5 th Grades (Elementary Schools)			
Requirement	Estimated min/wk of PE	Proportion of schools	Contribution to average weekly minutes (product of min/wk of PE and proportion of schools)
No requirement	0	0.0	0
1-89 min/wk	50	0.0	0
90-149 min/wk	100	0.0	0
150+ min/wk	150	1.00	150
Est. average min/wk			150
7 th Grades (Middle Schools)			
No requirement	0	0.0	0
1-89 min/wk	50	0.0	0
90-225 min/wk	150	0.85	128
225+ min/wk	225	0.15	34
Est.average min/wk			162

Using similar methods, if all middle school students were provided 225 min/wk of PE, the average weekly minutes of PE would increase by 125 minutes (from 100 to 225 min/wk) (Table 4).

Table 4. Estimated average min/wk of PE assuming all middle schools provide 225 min/wk			
7 th Grades (Middle Schools)			
No requirement	0	0.0	0
1-89 min/wk	50	0.0	0
90-225 min/wk	150	0.0	0
225+ min/wk	225	1.0	225
Est.average min/wk			225

Quality estimates (percent of time in moderate to vigorous PA)

Increased quality of PE would raise the proportion of class-time spent in moderate to vigorous physical activity (MVPA). The type and amount of activity performed during PE in Georgia and elsewhere is largely unknown. Estimates of the time engaged in MVPA range from 10-15% to <50%, with the remainder spent in lighter activity. The few available estimates from the literature suggest that the proportion of class-time spend in MVPA would increase from about 40% of the time to about 50%. (Kelder et al. Health Educ Behav. 2003;30:463-75 and Sallis et al. Am J Public Health 1997;87:1328-34)

Average MET values for regular PE class (40% MVPA) and higher quality PE class (50% MVPA)

During current PE classes students are assumed to spend 60% of the time in light activity (average MET value = 2) and 40% in MVPA (average MET value =5) for an overall average of 3.2 METs ($2*0.6 + 5*0.4 = 3.2$). During enhanced PE classes students spend 50% of the time in light activity and 50% in MVPA for an average of 3.5 METs ($2*0.5 + 5*0.5 = 3.5$). The number of minutes spent in MVPA instead of light PE during higher quality PE is shown for the three time levels of weekly PE (current time, all schools ≥ 150 min/wk, all middle schools ≥ 225 min/wk).

Key Assumptions

1. Currently, elementary and middle school students spend an average of 100 min/wk in PE class.
2. If state-wide time requirements are implemented, schools already exceeding those requirements will continue to do so.
3. If all schools required a minimum of 150 min/wk of PE, elementary school students (grades K-5, approximate ages 5-10) would spend an average of 150 min/wk and middle school students (grades 6-8, approximate ages 11-13) an average of 162 min/wk in PE class.
4. If all middle schools required a minimum of 225 min/wk of PE, middle school students an average of 225 min/wk in PE class.
5. The MET value for children sitting in a classroom is 1 MET.
6. The MET value for time spent in light activities during PE is 2.
7. The MET value for time spent in MVPA during PE is 5.
8. The current average MET value for the time spent in PE is 3.2 METs (assumes 60% of time in light activities, 40% of time in MVPA).
9. The average MET value for time spent in higher quality PE is 3.5 METs (assumes 50% of time in light activities and 50% in MVPA).
10. The probability of change in PE time and behavior during PE is independent of weight category.
11. Each student’s weight equals the mean weight (in Kg) of his or her age-sex-weight-category-specific group.

Calculations

Calories = (minutes of activity)*(MET value of activity)*(3.5)*(weight in kg)/200

Annualized min/day of new activity students = (new min/wk)*(36wks/yr)*(1yr/365days)

Change in calories/day = (new min/wk) *(36wks/yr)*(1yr/365days)*(MET value of new activity – MET value of old activity)*3.5*(weight in kg)/200

Change in calories/day for new minutes of standard PE = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.2 - 1)*3.5*(weight in kg)/200

Change in calories/day for new minutes at MVPA during higher quality PE = (new min/wk)

(36wks/yr)(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200

Elementary students

Current time + higher quality (50% MVPA) = (new min of MVPA/wk) *(36wks/yr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = $10*36*(1/365)*0.3*3.5*(weight\ in\ kg)/200 = .005*Kg$

≥150 min wk (added to current time) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.2-1.0)*3.5*(weight in kg)/200 = $50*36*(1/365)*2.2*3.5*kg/200 = .190*Kg$

Higher quality added to ≥150 min/wk (assumes the .190*Kg has already been added) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.5- 3.2)*3.5*(weight in kg)/200 = $15*36*(1/365)*0.3*3.5*kg/200 = .008*Kg$

Middle school students

Current time + higher quality (50% MVPA) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = $10*36*(1/365)*0.3*3.5*(weight\ in\ kg)/200 = .005*Kg$

≥150 min wk (added to current time) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.2-1.0)*3.5*(weight in kg)/200 = $62*36*(1/365)*2.2*3.5*kg/200 = .235*Kg$

Higher quality added to ≥150 min/wk (assumes the .235*Kg has already been added) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.5- 3.2)*3.5*(weight in kg)/200 = $16.2*36*(1/365)*0.3*3.5*kg/200 = .008*Kg$

≥225 min wk (added to current time) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.2-1.0)*3.5*(weight in kg)/200 = $125*36*(1/365)*2.2*3.5*kg/200 = .475*Kg$

Higher quality added to ≥225 min/wk (assumes the .475*Kg has already been added) = (new min/wk) *(36wks/yr)*(1yr/365days)*(3.5- 3.2)*3.5*(weight in kg)/200 = $22.5*36*(1/365)*0.3*3.5*kg/200 = .012*Kg$

Background, high school students

Time estimates

During 4 years of high school students are required to take 1 credit hour of physical education. The subject content of physical education class is 50% health education (class room study) and 50% traditional physical education. Assuming a class is 50 minutes per school day, and that half of the periods are spent in PE activities, during the school year the students get about 25 minutes per school day of PE. Some students report taking PE less often than daily. Assuming these students take PE two days per week, they would get about 10 minutes per school day of PE.

Based on the Georgia Student Health Survey, 44% of male high school students and 27% of female high school students report that they have daily PE classes; another 8% of male students and 5% of female students report that they have less than daily PE classes.

Drawing upon the above information, we estimate that high school males spend an average of 11.8 min/day and high school females spend 7.25 minutes per day in PE (see table, below).

High School Table 1. Estimated average number of minutes per day currently spent in PE averaged across the calendar year			
Male Students			
Frequency of PE	Proportion of students	Average minutes per school day of PE	Contribution to average min per school day of PE (product of proportion of students and min/day)
None	0.48	0	0
2 days/week	0.08	10	0.8
Daily	0.44	25	11
Est. average			11.8
Female Students			
None	0.68	0	0
2 days/week	0.05	10	0.5
Daily	0.27	25	6.75
Est. average			7.25

The estimated increase in energy expenditure that would occur if required PE were increased from 1 credit hour to 2 credit hours, the proportion of male and female students taking daily PE is increased to 50%. This is done because during the four years of high school students would need to take PE for a period of time equivalent to 2 school years, thus about half of all students would be taking PE at all times. Assuming this change (High School Table 2) the estimated average number of minutes per school day in PE would increase from 11.8 to 12.7 min/day for males, a difference of 0.9 min/day, and would increase from 7.25 to 12.5 min/day for females, a difference of 5.25 min/day.

If higher quality PE were introduced (increase MVPA during PE from 40% to 50%), males would get 1.18 more minutes per day of MVPA than under current conditions and 1.27 more minutes per day of MVPA if all students were required to take 2 credit hours of PE. Females would get .725 minutes per day more of MVPA than under current conditions and 1.25 more minutes per day if all students were required to take 2 credit hours of PE.

High School Table 2. Estimated average number of minutes per day spent in PE averaged across the calendar year if requirement is increased from 1 to 2 credit units.

Male Students			
Frequency of PE	Proportion of students	Average min/day of activity spread across entire year	Contribution to min/day of activity for entire high school student body (product of proportion of students and min/day)
None	0.48	0	0
2 days/week	0.02	10	0.2
Daily	0.50	25	12.5
Est. average			12.7
Female Students			
None	0.50	0	0
2 days/week	0.00	10	0
Daily	0.50	25	12.5
Est. average			12.5

Male high school students

Current time + higher quality (50% MVPA) = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = 1.18*180*(1/365)*0.3*3.5*(weight in kg)/200 = .003*Kg

2 credit hours = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.2-1)*3.5*(weight in kg)/200 = 0.9*180*(1/365)*2.2*3.5*(weight in kg)/200 = .017*Kg

Higher quality added to 2 credit hours (assumes the .017*Kg has already been added) = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = 1.27*180*(1/365)*0.3*3.5*(weight in kg)/200 = .003*Kg (new min/wk)

Female high school students

Current time + higher quality (50% MVPA) = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = 0.725*180*(1/365)*0.3*3.5*(weight in kg)/200 = .002*Kg

2 credit hours = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = 5.25*180*(1/365)*2.2*3.5*(weight in kg)/200 = .100*Kg

Higher quality added to 2 credit hours (assumes the .100*Kg has already been added) = (new min/day) *(180days/schoolyr)*(1yr/365days)*(3.5-3.2)*3.5*(weight in kg)/200 = 1.25*180*(1/365)*0.3*3.5*(weight in kg)/200 = .003*Kg