



# Failing Fitness:

## PHYSICAL ACTIVITY AND PHYSICAL EDUCATION IN SCHOOLS

*The California Endowment commissioned this report as part of its efforts to improve physical activity, reduce childhood obesity and reduce health disparities in California. Further reports on PE and physical activity for California youth are forthcoming to inform discussions about needed policy changes.*

■ ACTIVITY MATTERS FOR CALIFORNIA KIDS® POLICY BRIEF January 2007

### NOTES

This brief highlights findings from a study examining the current state of physical activity and PE in a statewide sample of 77 California schools. It provides insight on improving PE and outlines recommendations for policy solutions to increase physical activity among all students. The information presented here can be used to inform policymakers, school officials, parents and others in making schools healthier, more active places for students.

### Increasing Physical Activity for Healthy Children

Escalating rates of childhood obesity and diabetes, and the precipitous decline in children's physical activity levels, constitute alarming national health trends. There are twice as many overweight children and nearly three times as many overweight teens in the United States as there were two decades ago.<sup>1</sup> These increases are even more significant in low-income and ethnic minority groups.<sup>2</sup> In part, disparities in obesity rates among ethnic minority youth may be attributed to below-average levels of physical activity, particularly among girls.<sup>3</sup> An excess of calories consumed relative to the calories used for

physical activity and growth is contributing to increasing rates of obesity.<sup>4</sup>

Reversing this troubling trend means addressing this energy surplus in the places where kids spend most of their waking moments—schools. There is an urgent need to implement effective policies and practices to increase physical education (PE) and physical activity among all students in order to prevent excess weight gain and improve mood, attentiveness and concentration. This is especially true for schools in low-income communities, where obesity and health disparities are greatest.

### SUMMARY OF FINDINGS

Key findings reported in this brief indicate that PE quantity and quality have declined, and may adversely affect the learning environment, especially in low-income schools:

- Elementary schools are not providing the required number of minutes for PE.
- Most time during PE is spent being sedentary; only four minutes of every half hour involves vigorous activity.
- Bigger class sizes translate to less active PE classes on average; students in classes with more than 45 students are half as active as students in smaller classes.
- Students in lower income schools spend less time being active in PE.
- Level of activity in PE, not total PE time, is linked to student fitness levels.
- Higher levels of activity in PE are associated with better academic performance.

“We need to help teachers adhere to PE standards in the elementary schools and give them ideas on how to incorporate physical activity,” says a stakeholder.

School-based, activity-focused PE is an effective, evidence-based method for improving physical activity and fitness.<sup>5</sup> Recent evidence also suggests that investment in PE can prevent weight gain: a RAND study found that one hour of PE participation in kindergarten was associated with less weight gain among overweight and at-risk-for-overweight girls one year later.<sup>6</sup>

PE requirements exist in 48 states and Washington, D.C., but they are rarely enforced or sufficiently funded. While the stated purpose of PE is to teach movement skills and to promote physical fitness, most policies focus on mandating minimum PE time per student in terms of total minutes, without focusing equally on quality or effectiveness of the PE instruction. Few states address levels of activity during PE or during other opportunities for kids to be physically active in school, such as recess.<sup>7</sup> Current Healthy People 2010 recommendations state that 50% of PE should be spent in moderate-to-vigorous physical activity.

California law requires 200 minutes of PE every 10 school days (100 minutes per week) at the elementary level and 400 minutes every 10 days (200 minutes per week) in secondary schools. These state requirements are less than the nationally recommended PE duration of 150 minutes per week and 225 minutes per week, respectively.<sup>8</sup> A recent study conducted by the California Center for Public Health Advocacy found that fewer than half of California school districts met the state mandated elementary school PE requirement of 200 minutes

every 10 days, regardless of the district’s socioeconomic status or location.<sup>9</sup>

## Methodology

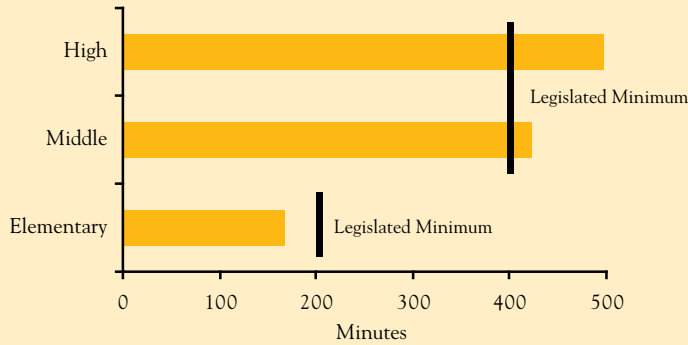
The following findings and recommendations reflect recently completed research on PE- and physical-activity-related policies, programs, practices and participation in a sample of 77 public schools representing 10 school districts across California. The districts, drawn from a range of geographic areas, were selected to include students in schools of varying socioeconomic status and high and low FitnessGRAM\* scores.

Three data collection methods were employed: a self-administered survey of principals, telephone and in-person stakeholder interviews (school board members, superintendents, PE directors, parents and teachers), and school environmental audits. Audit data were collected using a modified tool developed at San Diego State University to directly observe activity levels during PE classes and recess.<sup>10</sup>

\*The FitnessGRAM consists of six tests (e.g., one-mile run) measuring different components of fitness to be performed annually on 5th, 7th and 9th graders as mandated by state law.

FIGURE 1

AVERAGE NUMBER OF MINUTES OF PE PER 10 DAYS (schools assessed within this study)



**Time spent in PE varies widely among grade levels.**

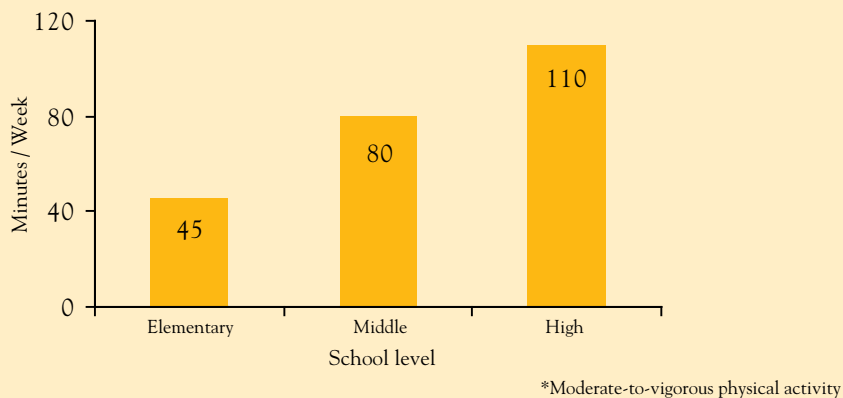
The elementary schools sampled fall short—by 32 minutes on average—of the required 200 minutes of PE for every 10 days. A majority of schools fall below this minimum, and some schools offer as little as 70 minutes every 10 days. Most middle and high schools are meeting the required 400 minutes every 10 days, but some offer only 300 or 350 minutes.

**Elementary students get the least amount of activity per week.**

Even though elementary school students are on average the most active in PE class, they achieve the least amount of active time overall due to inadequate duration of scheduled PE. These students spend 65 fewer minutes per week in moderate-to-vigorous physical activity in PE classes than high school students enrolled in PE. High school students enrolled in PE are physically active for nearly two hours a week during PE; middle school students average about 1.5 hours a week.

FIGURE 2

MINUTES OF MVPA\* IN PE PER WEEK, BY GRADE LEVEL

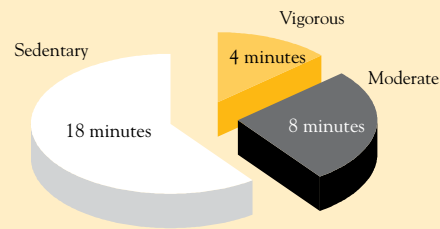


“We only have three tennis courts,” says a stakeholder. “We can’t teach tennis skills when we are rotating games every 10 minutes.”

“I think at the K-6 level [PE] needs to be more focused,” says a stakeholder. “Most of it is recess.”

FIGURE 3

ACTIVITY TIME DURING AN AVERAGE 30-MINUTE PE CLASS



### Students spend most of the time being sedentary during PE.

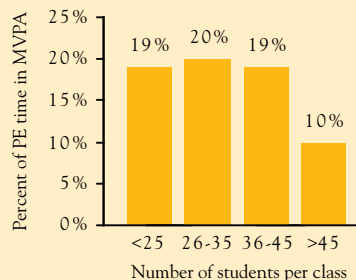
On average, only four minutes of every half hour of PE in California schools includes vigorous activity. This falls dramatically short of the Healthy People 2010 recommendation. Even when classes are engaged in activities like soccer, ultimate Frisbee, dance or softball, students spend the majority of class time standing while roll is taken or awaiting their turn to play. Stakeholders feel inadequate funding and facilities, and large PE classes, are partially to blame.

### Active PE time decreases with larger class sizes.

In secondary school, students in large classes (more than 45 students) are half as active as those with 45 or fewer, and get less than half the amount of moderate-to-vigorous physical activity as those in classes with less than 25 students. In large classes, students spend only 10% of PE time being active. Even in the smaller classes, students are active for only 20% of the time.

FIGURE 4

PERCENT OF PE TIME IN MVPA, BY CLASS SIZE FOR SECONDARY SCHOOL LEVEL



### Students in lower income schools spend less time being active in PE.

Students in more affluent schools spend 20% more PE time engaged in moderate-to-vigorous physical activity than students in low-income schools.

“Physical activity and PE should be daily. Time and class size is a factor,” says a stakeholder. “Cuts normally go to PE instructors and there are no caps on class size.”

Additional findings emerge when data from this study are combined with FitnessGRAM data assessing student fitness levels and with Academic Performance Index data collected by schools themselves.

**PE quality, as reflected in higher activity levels, determines fitness—not minutes spent in class.** Students who attend schools with higher levels of physical activity during PE are more likely to be fit, as reflected in schools' average FitnessGRAM scores.

**Higher income school districts typically have higher average activity levels in PE and have higher average fitness levels.** Income level of school districts is highly correlated with the percentage of PE time spent engaged in moderate-to-vigorous physical activity, and with FitnessGRAM scores. Also, students in the fittest low-income schools engage in about as much moderate-to-vigorous physical activity during PE as students in the least fit

higher income schools. This illustrates the higher average activity levels of students in higher income schools compared to students in low-income schools.

**Increased physical activity is associated with improved academic performance.** Though this relationship is seen across income levels, it is weaker in low-income schools.

FIGURE 5

PERCENT OF PE CLASS PERIOD IN MVPA BY % OF STUDENT BODY ELIGIBLE FOR FREE/REDUCED LUNCH AND DISTRICT FITNESSGRAM PASS RATES

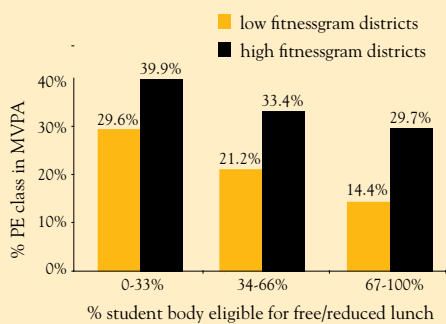
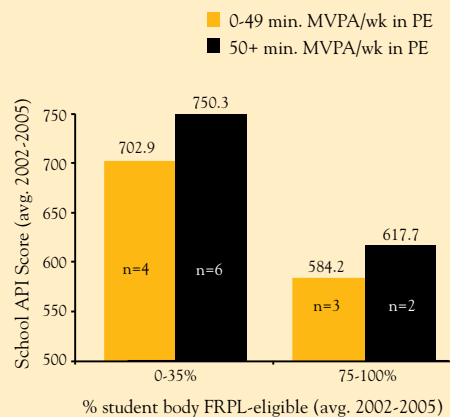


FIGURE 6

SCHOOL ACADEMIC PERFORMANCE INDEX (API) SCORES BY MINUTES MVPA IN PE AND PERCENT STUDENT BODY ELIGIBLE FOR FREE/REDUCED PRICE LUNCH (FRPL) (AVG. 2002-2005)



These findings linking higher fitness and academic scores to increased time spent active in PE suggests the need for additional research. Further study is required in order to understand the basis for these differences, particularly among high- versus low-income schools, and to inform school policymakers whose focus has historically been on maximizing student academic achievement.

Children's easy access to unhealthy foods at school, as well as in their communities, has contributed to climbing rates of childhood overweight and obesity.

The following conclusions may be drawn from these findings:

- Both quality and quantity of PE is deficient in K-12 public schools.
- PE is most deficient in elementary schools.
- Low-quality PE contributes to health disparities.
- Ensuring sufficient PE quality and quantity is most critical for low-income students and those at high risk for overweight and obesity, such as ethnic minority communities.

For school PE to become part of the solution to the childhood obesity epidemic, the following practices must be incorporated into policy:

- To ensure PE quality, PE should be taught by qualified instructors.
- To ensure sufficient activity occurs during PE class, PE class size should be similar to effective academic class size.
- To ensure sufficient quantity of PE in school, minutes of PE class should meet or exceed state standards; exemptions from PE should be eliminated except for medical contraindication.

Based on study findings, implementing the following strategies would result in students' increased physical activity levels during the school day:

- Increase PE duration requirements for elementary schools.
- Monitor and enforce requirements for PE duration.
- Monitor moderate-to-vigorous physical activity time during PE to ensure national minimum standards are met.
- Limit PE class size to no more than that found in classes for other academic subjects.
- Implement strategies to increase moderate-to-vigorous physical activity during PE, such as hiring more PE specialists for elementary schools; using activity-focused curricula; requiring PE coursework for certification of all elementary school classroom teachers; and providing in-service teacher training in PE and physical activity promotion approaches.
- Provide additional resources to low-income schools.

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Prepared by researchers at the UCLA School of Public Health's Center to Eliminate Health Disparities, Oakland-based Samuels & Associates and the Active Living Research Program at San Diego State University.

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- <sup>1</sup> Ogden, C. L. and others. "Prevalence and trends in overweight among US children and adolescents, 1999-2000." *Journal of the American Medical Association*, 2002;288(14),1728-1732.
- <sup>2</sup> Freedman, D. S. and others. "Racial and ethnic differences in secular trends for childhood BMI, weight, and height." *Obesity* (Silver Spring), 2006;14(2),301-308.
- <sup>3</sup> Kimm, S. Y. and others. "Relation between the changes in physical activity and body-mass index during adolescence: a multicentre longitudinal study." *Lancet*, 2005;366(9482),301-307.
- <sup>4</sup> Wang, Y. C. and others. "Estimating the energy gap among US children: a counterfactual approach." *Pediatrics*, 2006;118(6),e1721-1733.
- <sup>5</sup> Institute of Medicine (U.S.). *Progress in Preventing Childhood Obesity: How do we measure up?* Washington, D.C.: National Academies of Sciences; 2006.
- <sup>6</sup> Datar, A., and Sturm, R. "Physical education in elementary school and body mass index: evidence from the early childhood longitudinal study." *American Journal Public Health*, 2004;94(9),1501-1506.
- <sup>7</sup> Trust for America's Health. *F as in fat: how obesity policies are failing in America*. Washington, DC: Trust for America's Health; 2005.
- <sup>8</sup> San Diego State University. *PE Matters for California Kids*. A policy brief from The California Endowment. Available from: <http://www.calendow.org>. San Diego State University. Los Angeles, CA: The California Endowment; 2007.
- <sup>9</sup> California Center for Public Health Advocacy. *District Compliance Summary in California Elementary School PE Requirements 2004-05 & 2005-06*. Available from: <http://www.publichealthadvocacy.org/PDFs/DistrictComplianceChart.pdf>. California Center for Public Health Advocacy (CCPHA). Davis, CA: California Center for Public Health Advocacy (CCPHA); 2006.
- <sup>10</sup> McKenzie, T. L. "Observational measures of children's physical activity." *Journal of School Health*, 1991;61(5),224-227.