



HEALTHY COMMUNITIES DATA AND INDICATORS PROJECT

Short Title: FITNESSGRAM®

Full Title: Percent of children scoring 6 of 6 on FITNESSGRAM®

1. **Healthy Community Framework:** Meets basic needs of all
2. **What is our aspirational goal:** Access to affordable and safe opportunities for physical activity
3. **Why is this important to health?**

Description of significance and health connection

Two of the most common chronic diseases in youth in the United States are diabetes mellitus and obesity. The number of new diabetes cases among youth increased from 3% type 2 cases in 1990 to 45% type 2 to cases in 2005. This increase is most likely associated with an increase in obesity and a decline in exercise behaviors.¹ In 2011-2012, 17% of U.S. children and adolescents aged 2-19 years were obese.² In 2010 in California, 38.8% of low income children and adolescents aged 2-19 years were overweight or obese.³ Youth of color and those of low socioeconomic status are disproportionately impacted by diabetes and obesity.^{2,3}

California Education Code Section 60800 requires Local Educational Agencies to administer the Physical Fitness Test (PFT) annually to students in grades five, seven, and nine. The designated PFT is the FITNESSGRAM®. The test evaluates six fitness areas: 1) Aerobic Capacity, 2) Body Composition, 3) Muscle Strength, Endurance and Flexibility, 4) Trunk Extensor Strength and Flexibility, 5) Upper Body Strength and Endurance, and 6) Flexibility. The test is scored based on criterion-referenced standards to evaluate fitness. A passing result in all six areas (6/6) of the test represents “a level of fitness that offers some protection against the diseases associated with physical inactivity.”⁴ Recent data (2014) indicates that only about one-third of California’s students obtained passing scores in the six test areas. The fraction of children obtaining passing scores is even lower among African American, American Indian Alaska Native, Native Hawaiian or Pacific Islander, and Latino children, and among economically disadvantaged children.⁵

Summary of evidence

Multiple studies have found associations between physical activity, weight, and FITNESSGRAM® results. Students that reported 2 hours per day or less of sedentary behaviors had higher odds of achieving passing results in the FITNESSGRAM® fitness areas of Aerobic Capacity, Muscular Strength and Endurance, Flexibility, and Body Composition.⁶ A one centimeter increase in waist circumference, which is a measure of excess abdominal fat, decreased the odds of achieving a passing result in Aerobic Capacity by 28% in girls and 25% in boys.⁷ Children with healthy Body Mass Index are more likely to obtain passing results in the FITNESSGRAM® fitness areas of Aerobic Capacity, Strength, Endurance, and Flexibility.⁸

Key References

1. Price JH, Khubchandani J, McKinney M, Braun R. Racial/ethnic disparities in chronic diseases of youths and access to health care in the United States. *BioMed Research International*, 2013; 2013: 787616. doi:10.1155/2013/787616.
2. Centers for Disease Control and Prevention. [Childhood Obesity Facts](#). Atlanta, GA; Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion.
3. California Department of Public Health. [Obesity in California: The Weight of the State, 2000-2012](#). Sacramento, CA; California Department of Public Health, Nutrition Education and Obesity Prevention Branch, 2014
4. California Department of Education. [Physical Fitness Testing \(PFT\)](#). Sacramento, CA: California Department of Education, Physical Fitness Testing; 2015. Accessed September 2nd, 2015.
5. California Department of Education. [DataQuest](#). Sacramento, CA: California Department of Education; 2015. Accessed September 2nd, 2015.



6. Tucker JS, Martin S, Jackson AW, Morrow Jr. JR, Greenleaf CA, Petrie TA. Relations between sedentary behavior and Fitnessgram® Healthy Fitness Zone achievement and physical activity. *J Phys Act Health*, 2014; 11(5): 1006-1011.
7. Walker JL, Murray TD, Eldridge J, Squires WG, Silvius P, Silvius E. The association between waist circumference and Fitnessgram® aerobic capacity classification in sixth-grade children. *Pediatr Exerc Sci*, 2015. Epub ahead of print.
8. Praphul J, Charity B, Howat H. Relationship of body mass index and fitness levels among schoolchildren. *J Strength Cond Res*, 2012; 26(4): 1006-1014.

4. What is the indicator?

Detailed Definition: Percent of children that obtain a passing result in the six fitness areas of the FITNESSGRAM®

- Stratification: 3 grades (5th, 7th, 9th), 7 race/ethnicity groups (AIAN, AfricanAm, Asian, Latino, Multiple, NHOPI, White), three school types (all schools, non-charter, charter).

Data Description

- Data sources: California Department of Education (CDE) Physical Fitness Testing (PFT) Program research files, <http://www.cde.ca.gov/ta/tg/pf/pftresearch.asp>
- Years available: 2001-2002, 2002-2003, 2003-2004, 2004-2005, 2005-2006, 2006-2007, 2007-2008, 2008-2009, 2009-2010, 2010-2011, 2011-2012, 2012-2013, 2013-2014
- Updated: Annually
- Geographies available: school district, county, region, state

The CDE-PFT research files were downloaded and data for the number of children tested (denominator), and the number of children obtaining a 6/6 result on the FITNESSGRAM® (numerator) by grade, school type, and race/ethnicity were extracted using SAS. The numerator was suppressed if 10 children or less were tested. Data for Asian subgroups (Filipino for all years, and Chinese, Japanese, Korean, Vietnamese, Asian Indian, Laotian, Cambodian, and Other Asian available only from 2005-06 to 2009-10) and Pacific Islander subgroups (Native Hawaiian, Guamanian, Samoan, Tahitian, and Other Pacific Islander available only from 2005-06 to 2009-10) were aggregated to obtain reliable estimates. The percent was calculated and the standard error was obtained using a binomial approximation. Relative standard errors (RSE), and 95% upper and lower confidence intervals, decile rankings of school districts and relative risk in relation to state average were calculated. The Public School Database was used to obtain complete school district names and the 7-digit National Center for Educational Statistics (NCES) school district identification number (<ftp://ftp.cde.ca.gov/demo/schlname/pubschls.xls>).

5. Limitations

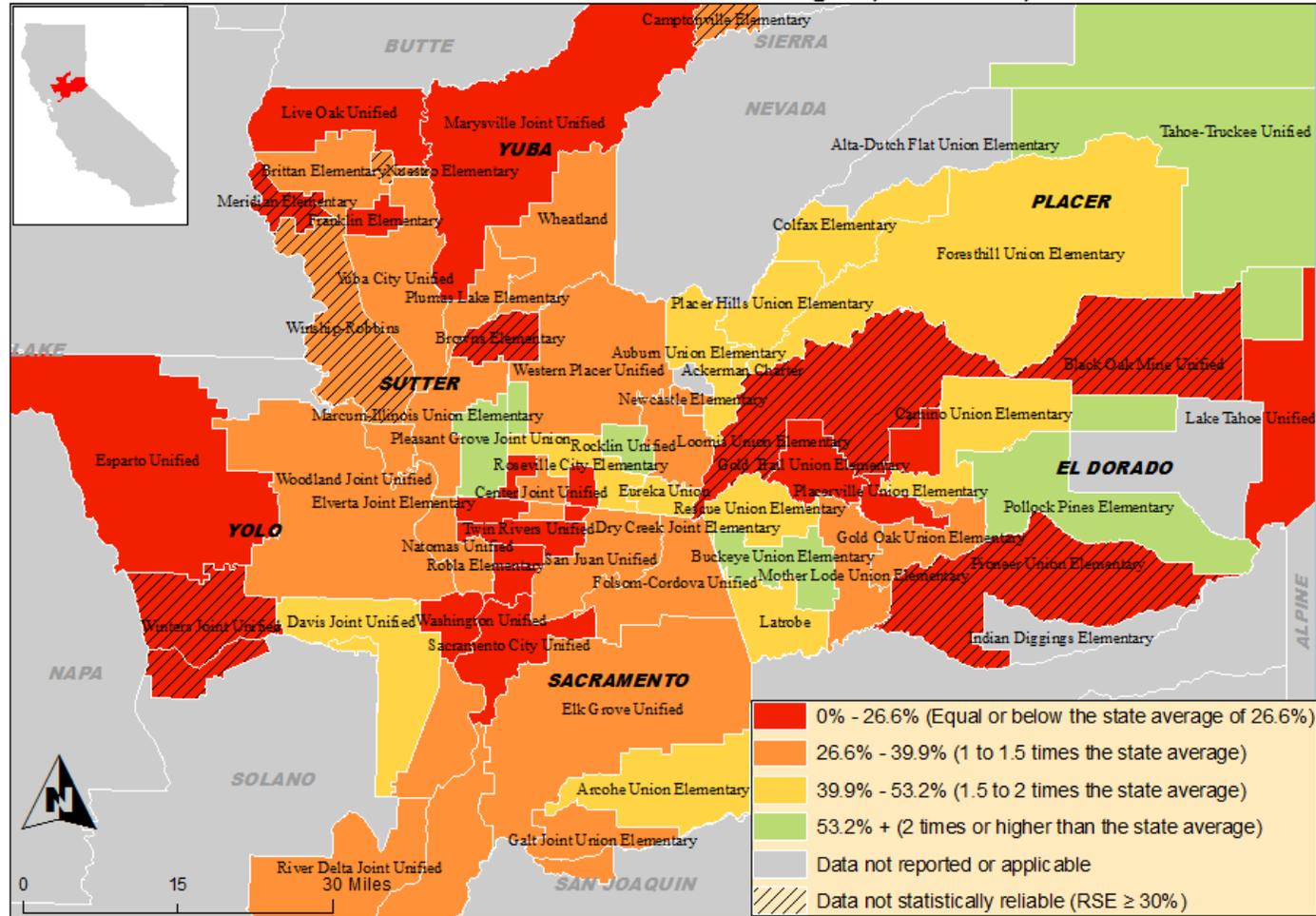
The test is only administered to children in public schools; it is unknown if the type of school (public, non-public) could affect the test scores. The indicator is a conservative estimate of fitness level in children attending public schools since only those children passing the 6 fitness areas are included. Students who are physically unable to take the entire test battery are given as much of the test as conditions permit; their results are included in the data files. Students that repeat a grade must retake the exam. Frequently asked questions about the test can be found at <http://www.cde.ca.gov/ta/tg/pf/pft11fasqa.asp#q7>. Some children might attend schools outside the boundaries of the school district where they reside. The FITNESSGRAM® criterion-referenced standards have changed in the years 2005, 2010, and 2013. Data collected in the following year to the change is affected and comparisons over time must be done with caution. The “Multiple” race/ethnicity group is only available starting in 2010-2011.

6. Projects using this indicator

California Health and Human Services Agency, Let's Get Healthy California.
<http://www.chhs.ca.gov/Pages/LGHCTab.aspx>.

7. Examples of Indicator Maps, Figures, and Tables

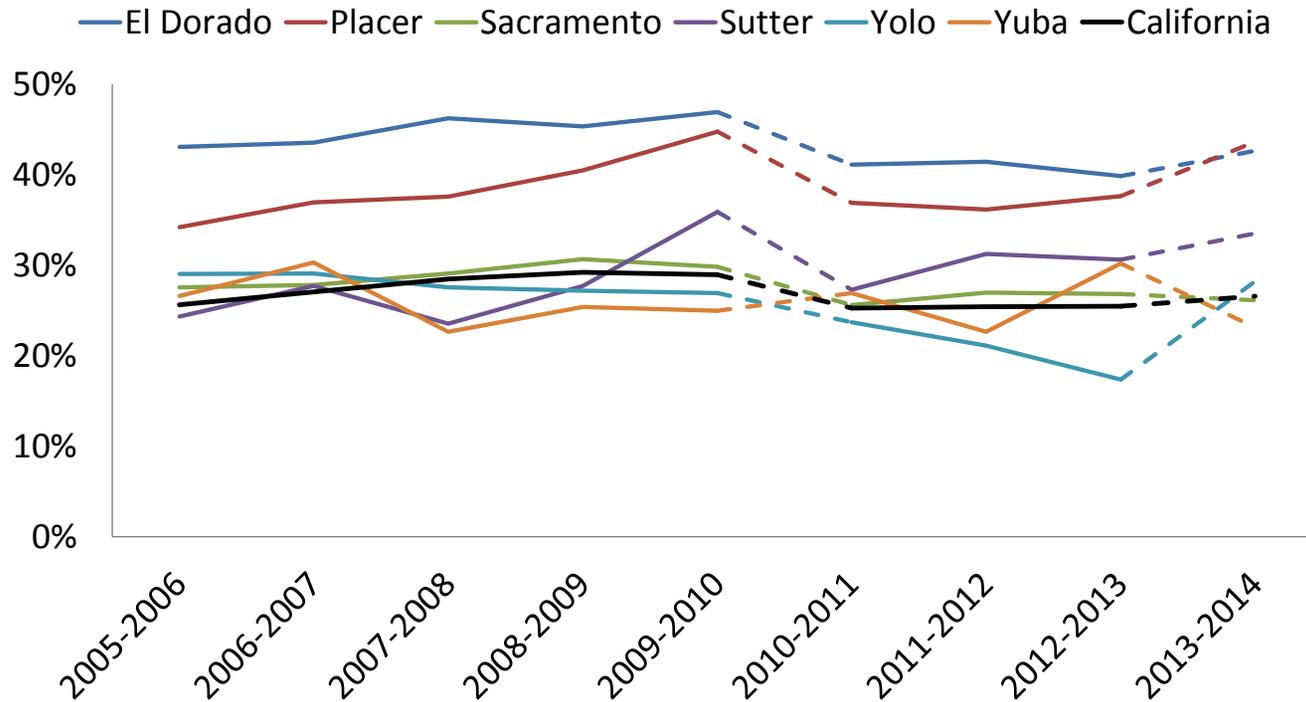
Map 1: Percent of Children in the Fifth Grade Scoring 6/6 on FITNESSGRAM, School Districts* in the Sacramento Area Region, California, 2013-2014



*Elementary and Unified School Districts only, no data for Secondary School Districts was available for the Region for 2013-2014.
 Source: California Department of Education, Physical Fitness Testing Program, 2013-2014.
 School District Boundaries from U.S. Census TIGER/Line Shapefiles, 2013.

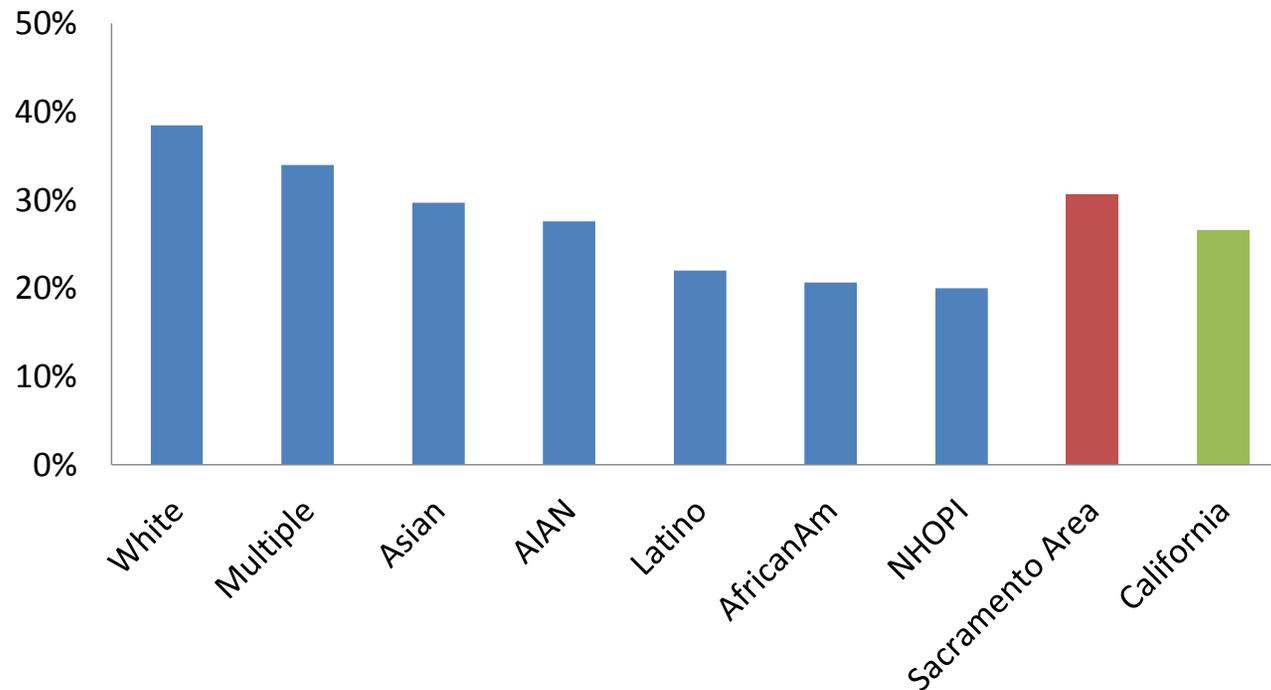
Analysis by CDPH.

Percent of Children in the Fifth Grade that Scored 6/6 on FITNESSGRAM[®], Counties in the Sacramento Area Region, California, 2005-2006 to 2013-2014



Source: California Department of Education, Physical Fitness Testing Program. Dashed lines represent periods when changes to the FITNESSGRAM[®] criterion-referenced standards were implemented.

Percent of Children in the Fifth Grade that Scored 6/6 on FITNESSGRAM® by Race/Ethnicity, Sacramento Area Region, California, 2013-2014



Source: California Department of Education, Physical Fitness Testing Program. AfricanAm=African American; AIAN=American Indian/Alaska Native; NHOPi=Native Hawaiian Other Pacific Islander.



Table 1. Percent of Children that Scored 6/6 on FITNESSGRAM® by Race/Ethnicity; Fifth, Seventh and Ninth Grades, Sacramento Area Region, California, 2013-2014.

Race/Ethnicity	Grade 5	Grade 7	Grade 9
African American	20.7	26.0	30.8
American Indian/Alaska Native	27.6	28.5	34.3
Asian	29.7	39.5	47.3
Latino	22.0	28.9	32.0
Multiple	34.0	36.2	38.9
Native Hawaiian Other Pacific Islander	20.0	25.8	32.8
White	38.5	41.3	47.6
Sacramento Area	30.7	35.7	41.2
California	26.6	33.0	38.1

10/08/2015