



**Findings from the  
1999 California Children's  
Healthy Eating and Exercise  
Practices Survey:  
Intervention Implications  
and Campaign Evaluation**

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September 2004





# ACKNOWLEDGEMENTS

The authors would like to thank those who helped to prepare this report. The data collection was directed by Sue Jolly, M.B.A. at Fleishman-Hillard Knowledge Solutions. Special thanks are extended to Susan Foerster, M.P.H., R.D.; Sharon Sugarman, M.S., R.D., F.A.D.A.; Desiree Backman, Dr.P.H., M.S., R.D.; Reba Meigs, M.P.A.; Helen Magnuson, M.P.H., R.D.; Sarah Adkins, M.P.H., R.D.; Sara Cook, M.P.H., C.H.E.S.; Carole Pirruccello, M.P.H., R.D.; Nancy Gelbard, M.S., R.D.; Stephen Bartlett, R.D.; Barbara Mknelly, M.S.; and Veronica Davison, M.A. for their scientific review. Appreciation is also extended to Amy Fong, B.S. for fact checking. Administrative support was provided by Linda Burg, Susanne M. Black, and Dennis Derenzy.





# TABLE OF CONTENTS

<b>Acknowledgements</b> .....	<b>i</b>
<b>Table of Contents</b> .....	<b>ii</b>
<b>Executive Summary</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>1</b>
Statement of the Problem .....	1
<i>California Children’s 5 a Day—Power Play! Campaign</i> .....	2
Target Audience .....	3
<i>Campaign Overview</i> .....	3
Theory.....	3
Determinants.....	4
Television Spots .....	4
Reach in 1999.....	5
<i>California Children’s Healthy Eating and Exercise Practices Survey</i> .....	5
<b>Sample and Methods</b> .....	<b>6</b>
<b>Limitations</b> .....	<b>7</b>
<b>Results</b> .....	<b>8</b>
Where Did Children Report Getting the Food They Ate? .....	8
Who Prepared Children’s Meals and Snacks? .....	9
When Did Children Eat Fruits and Vegetables?.....	9
Who Prepared Meals and Snacks With Fruits and Vegetables? .....	10
Awareness of the <i>Campaign’s</i> Television Spots.....	11
What Did Children Report as the Main Idea of the <i>Campaign’s</i> Television Spots? .....	12
What Did Children Remember About the <i>Campaign’s</i> Television Spots? .....	13
Fruit and Vegetable Consumption.....	14
Belief in the Number of Servings of Fruits and Vegetables Needed for Good Health.....	15
Reinforcement and Food Preference .....	15
Physical and Sedentary Activity .....	16
Belief in the Recommended Amount of Physical Activity Needed for Good Health .....	17
School Environment.....	17
Vending Machines and School Meals.....	18
Physical Education .....	20

# TABLE OF CONTENTS

<b>Recommendations and Conclusions</b> .....	21
Intervention Implications.....	21
<i>Campaign</i> Evaluation.....	23
<b>References</b> .....	25
<b>Appendix A. Messages Recalled From the <i>California Children’s 5 a Day—Power Play!</i></b>	
<b><i>Campaign’s</i> Television Spots</b> .....	28
<b>Appendix B. Data Tables</b> .....	30
Table 1: Source of Food Consumed During Weekday Meals and Snacks .....	30
Table 2: Who Most Often Makes Children’s Meals and Snacks .....	31
Table 3: Proportion of Children Who Reported Eating 1 or More Servings of Fruits and Vegetables by Meal Times and for Snacks .....	32
Table 4: Proportion of Children Who Reported Eating Fruits and Vegetables at Meal and Snack Times by Who Prepares the Meal or Snack .....	33
Table 5: Percentage of California Children Reporting Awareness of the <i>Campaign’s</i> Television Spots .....	34
Table 6: California Children Reporting Awareness of the <i>Campaign’s</i> Television Spots Associated With Fruit and Vegetable Intake .....	35
Table 7: Range in Number of Servings of Fruits and Vegetables Consumed by Awareness of the <i>Campaign’s</i> Television Spots .....	36
Table 8: Belief About the Number of Servings of Fruits and Vegetables Needed for Good Health by Awareness of the <i>Campaign’s</i> Television Spots.....	37
Table 9: Belief About Personal Success Eating Enough Fruits and Vegetables.....	38
Table 10: California Children Reporting Awareness of the <i>Campaign’s</i> Television Spots Associated With Reinforcement, Food Preference, and Physical Activity Beliefs .....	39
Table 11: California Children Reporting Awareness of the <i>Campaign’s</i> Television Spot Associated With Physical and Sedentary Activities .....	40
Table 12: Prevalence of School Environment Factors Reported by California Children .....	41
Table 13: Frequency of School Physical Education Classes by Average Minutes of Physical Activity .....	42





# EXECUTIVE SUMMARY

In response to the growing concern about low fruit and vegetable consumption among children, the Cancer Prevention and Nutrition Section (CPNS) of the California Department of Health Services (CDHS) developed the *California Children's 5 a Day—Power Play! Campaign (Campaign)*. The *Campaign* uses a theoretically grounded, multi-channel, community-based approach to encourage low-income 9- to 11-year-old children to eat 5 or more servings of fruits and vegetables and, more recently, to be physically active for a minimum of 60 minutes every day in order to promote healthy growth, development, and academic achievement. Effective interventions are becoming paramount with the rapid rise in overweight among children and adolescents.

Subsequently, the *California Children's Healthy Eating and Exercise Practices Survey (CalCHEEPS)* was developed to fill a gap in the nutrition surveillance of California children. Statewide, there are no other population-based, representative surveys of diet and physical activity for children in the upper elementary school grades, resulting in a lack of information to guide the development and refinement of state programs, including the *California Children's 5 a Day—Power Play! Campaign*.

The 1999 *CalCHEEPS* used a demographically balanced market research panel of 2,000 households with 9- to 11-year-old children. It included a self-administered, parent-assisted mail survey and a follow-up telephone interview with a subset of the mail survey respondents. The mail survey consisted of a two-day food and activity diary. The telephone interviews collected children's unassisted knowledge, attitudes, and beliefs about diet and exercise. In total, 814 children throughout California returned the diary and 394 completed the interview. This report provides a special analysis of the formative research and evaluation findings.

## Intervention Implications

The 1999 *CalCHEEPS* results provide a snapshot of a typical school day for 9- to 11-year-old children and highlight directions for future *Campaign* development. On a typical school day, California children fell 2 servings short of the recommended fruit and vegetable intake and spent more time watching television and playing video games than they did on physical activity. The survey findings revealed six priority areas to help refine the *Campaign* to improve its impact on fruit and vegetable consumption and physical activity among children. In addition, it is hoped that these findings will assist others in the development, expansion, and refinement of effective nutrition education and physical activity interventions targeting this age group.

### Priority 1: Increase Participation in School Meal Programs

- Children who participated in the federal school meal programs ate significantly more servings of fruits and vegetables and were more likely to meet the 5 a Day recommendation.

### Priority 2: Increase the Availability and Accessibility of Fruits and Vegetables at Home and in School

- Efforts to improve availability and accessibility should focus on parents and schools, because they prepare most of the meals and snacks for 9- to 11-year-old children. Thus, children are heavily dependent upon their home and school food environments to facilitate healthful eating.

# EXECUTIVE SUMMARY

## **Priority 3: Empower Children to Make Healthful Food Choices**

- Many children prepared their own breakfast (40 percent), after-school snacks (50 percent), and evening snacks (46 percent). Ninety percent of those surveyed also expressed a desire to have fruit for an afternoon snack. However, breakfast and snack times were marked by relatively low fruit and vegetable consumption.

## **Priority 4: Address Other Out-of-Home Eating**

- Approximately one in ten children ate fast food for dinner on a typical school day, the second most common source of food. Most children (87 percent) ate dinner at home.

## **Priority 5: Promote School Physical Education**

- Children's reports indicated that some California schools fail to offer physical education classes. In addition, child-reported physical education fell 48 minutes short of the state mandate of 200 minutes every 10 days.

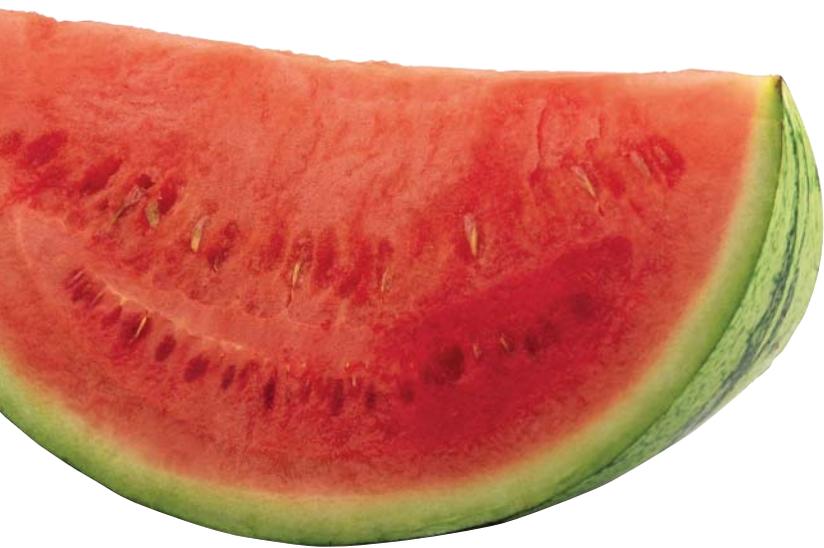
## **Priority 6: Promote 60 Minutes of Daily Physical Activity**

- Very few children (4 percent) knew the amount of physical activity recommended for good health.

## ***Campaign Evaluation***

The *Campaign* was successful at reaching 9- to 11-year-old children, particularly low-income children, with targeted television commercials and public service announcements. "Eat 5 servings of fruits and vegetables every day" ranked first among the responses for both the main idea and most memorable message of the *Campaign's* television spots. Exposure to the *Campaign's* television spots was highly associated with accurate beliefs of the daily fruit and vegetable intake recommendation for good health (e.g., a minimum of 5 servings). Children who recalled the television spots were also more likely than others to report eating 5 or more servings of fruits and vegetables on a typical school day.





# INTRODUCTION

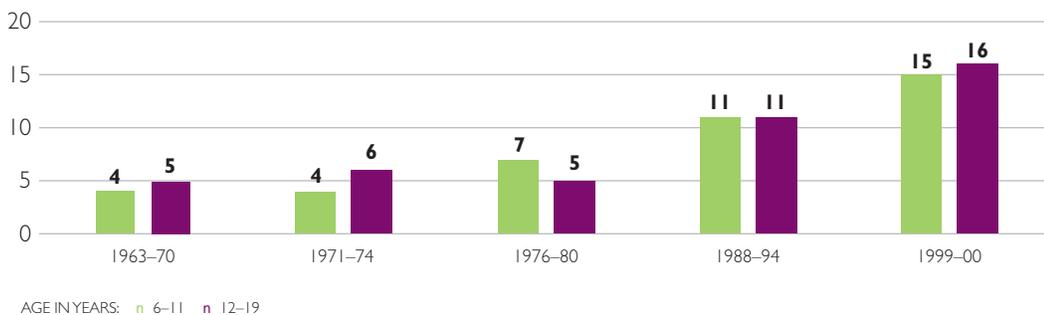


## Statement of the Problem

The prevalence of chronic disease precursors among children is staggering. Findings from the Bogalusa Heart Study (1980 to 1994) showed over one-quarter of 5- to 10-year-old children had high cholesterol, high blood pressure, or other early warning signs for heart disease.<sup>1</sup> In the U.S., the prevalence of measured overweight has doubled for children and tripled among teens in the past two decades and continues to rise.<sup>2,3</sup> National results from 1999 to 2000 indicate that 15 percent of 6- to 11-year-old children and 16 percent of 12- to 19-year-old adolescents are overweight.<sup>4</sup> In California, self-reported overweight among 9- to 11-year-old children parallels national findings at 15 percent, but self-reported overweight among 12- to 17-year-old adolescents is lower, reaching 10 percent in 2000.<sup>†,5,6</sup> Diabetes rates have risen with obesity rates. Type 2 diabetes, previously considered an adult disease, has increased dramatically in children and adolescents.<sup>7,8</sup>

## The Prevalence of Measured Overweight Continues to Rise Among Children and Adolescents in the U.S.

Percent of Children and Adolescents, 6–19 Years



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, Hispanic Health and Nutrition Examination Survey (1982-84), and National Health Examination Survey (1963-65 and 1966-70).

### Consequences of Childhood Overweight<sup>9</sup>

- Overweight children experience social discrimination, which is associated with poor self-esteem and depression.
- Risk factors for heart disease, such as high cholesterol and high blood pressure, occur with increased frequency in overweight children compared to children with a healthy weight.
- Overweight and obesity are closely linked to type 2 diabetes.
- Overweight children have a 50 percent chance of becoming overweight or obese adults.<sup>10</sup> The probability is 70 percent for adolescents.

### Body Mass Index<sup>3</sup>

Body mass index (BMI), expressed as weight in kilograms divided by height in meters squared, is recommended to identify children who are overweight. Based on national standards for children, a BMI at or above the 95th percentile for age and gender is considered overweight.

† Caution is warranted when drawing direct comparisons between national and state data because different data collection methods are used

## INTRODUCTION



Scientific literature highlights dietary intake and physically active lifestyles as key buffers in the fight against chronic disease. Poor diet and inactivity are cross-cutting risk factors that contribute significantly to several leading causes of death, including heart disease, cancer, stroke, and type 2 diabetes.<sup>11,12</sup> Between 50 to 80 percent of type 2 diabetes cases are associated with unhealthy eating patterns and sedentary lifestyles.<sup>12,13</sup> Research with children and teens suggests that overweight is often caused by lack of physical activity, unhealthy eating patterns, or a combination of these factors.<sup>9</sup>

In light of these strong relationships, it is of great concern to health professionals and parents alike that the majority of U.S. children fail to meet the diet and exercise guidelines outlined by the *Dietary Guidelines for Americans* to promote good health.<sup>14,15</sup>

Only 1 percent of children ate a diet consistent with federal nutrition recommendations according to the 1989 to 1991 Continuing Survey of Food Intakes by Individuals (CSFII).<sup>16</sup> Both national and state surveys show that children's consumption of fruits and vegetables is very low and remains below the recommended minimum of 5 servings a day. The 1994 to 1996 CSFII found that fruit and vegetable intake among 6- to 11-year-old boys and girls nationally was 3.8 and 3.7 daily servings, respectively.<sup>17</sup> In 1999, a California State survey of 9- to 11-year-old children revealed an even lower mean intake of 3.2 and 3.1 servings per day reported by boys and girls.<sup>†,18</sup>

The *Dietary Guidelines for Americans*, along with the National Association for Sport and Physical Education and the Institute of Medicine, recommend that children accumulate 60 minutes of moderate and vigorous physical activity combined most days of the week.<sup>15,19,20</sup> However, fewer than half of California children report achieving this much, and 14 percent fail to get 30 minutes of total activity including light, moderate, and vigorous physical activity.<sup>5</sup> Research also demonstrates that physical activity declines with age.<sup>21,22</sup> Children, especially girls, become less active as they move through adolescence.<sup>23,6</sup>

### ***California Children's 5 a Day—Power Play! Campaign***

In response to the growing concern expressed by parents, educators, health professionals, and members of the produce industry about low fruit and vegetable consumption among children, the CPNS of the CDHS developed and tested the *California Children's 5 a Day—Power Play! Campaign* from 1993 to 1996.<sup>24</sup> The regional rollout as a statewide social marketing campaign started in 1998 with funds from The California Endowment (TCE) and the United States Department of Agriculture Food Stamp Program (USDA FSP). The *Campaign* encourages low-income, 9- to 11-year-old children to eat 5 or more servings of fruits and vegetables and, more recently, to be physically active for at least 60 minutes every day in order to promote healthy growth, development, and academic achievement.

# INTRODUCTION

## Target Audience

The *Campaign* selected the 9- to 11-year-old age group as the primary target audience. During this transitional period, control of a child's diet shifts from total responsibility of the parent to shared responsibility with the child. Children become more autonomous in making their own food decisions and can participate in meal planning and food preparation.<sup>25</sup> Many children prepare their own breakfasts and snacks.<sup>5</sup> In addition, health beliefs begin to solidify, and interest in nutrition is high. "Food habits, likes and dislikes are established, some of which are transient, but many of which form the base for a lifetime of food choices and experiences."<sup>26</sup> Children remain very impressionable, with parents, peers, and the media influencing dietary behaviors and attitudes toward food.<sup>27</sup> Eating food away from home increases as children become more independent. Market research indicates that children usually make their first independent purchases by eight years of age. These purchases tend to be at convenience stores and supermarkets, with the majority of children buying snack foods.<sup>28</sup> This unique combination of developmental characteristics makes 9- to 11-year-old children an ideal target for nutrition education interventions.

## Campaign Overview

The *Campaign* uses a theoretically grounded, multi-channel, community-based approach.<sup>24</sup> It actively involves children in activities at schools, community youth organizations, farmers' markets, supermarkets, and restaurants/foodservice establishments and also reaches them through local promotions and media. Local lead agencies in the *Campaign's* regions receive funding to coordinate a community coalition and oversee the implementation of the *Campaign*. Local efforts are supported every other year by paid television advertising to increase children's awareness of the fruit and vegetable and physical activity messages, as well as the *Campaign*.

## Theory

The behavior change theories of the *Campaign* are the Resiliency Theory,<sup>29</sup> which posits that children are more resistant to risks when they have been empowered to make healthy choices for themselves, and the Social Learning Theory,<sup>30</sup> which suggests that there is an interplay among children, their behavior, and the social and physical environment. The *Campaign* addresses both psychosocial and environmental factors, with the two theories being intertwined throughout the messages and activities to inspire healthy changes in knowledge, bonding and belonging, affect, recognition and rewards, norms, skills, and the environment.



# INTRODUCTION



## Determinants

The *Campaign* targets multiple determinants of fruit and vegetable consumption among 9- to 11-year-old children. *CalCHEEPS* was developed to monitor statewide changes in the determinants and consumption of fruits and vegetables and to provide guidance for future direction of the *Campaign*. The key determinants assessed in 1999 included:

- **Awareness** of the *Campaign*,
- **Knowledge** or belief about the number of servings of fruits and vegetables recommended for good health,
- Parent and child interaction about the importance of healthful eating (**bonding/belonging**),
- Positive attitudes and beliefs related to fruits and vegetables, including fruit and vegetable preferences (**affect**),
- Positive reinforcement for healthful eating (**recognition/rewards**),
- Social **norms** favoring the consumption of fruits and vegetables,
- **Skills** related to preparing meals and snacks, and
- **Environmental** factors that facilitate or hinder healthy choices.

In addition to fruit and vegetable consumption, the *Campaign* uses these determinants as intermediate outcomes to track children's progress toward achieving the 5 a Day goal.

## Television Spots

During the 1999 survey year, two different *Campaign* television spots aired in California. These were a paid television advertisement entitled *Three Wishes* and a public service announcement (PSA) entitled *Shaq's Secret*.

*Three Wishes* featured a genie granting wishes to three children who wanted to be faster, stronger, and learn more. Eating fruits and vegetables was the key to making their wishes come true and the secret behind the genie's power. The main messages of the paid advertisement were:

- Eating fruits and vegetables can help you be faster, stronger, and learn more;
- Eating fruits and vegetables gives you power; and
- It is important to eat 5 servings of fruits and vegetables every day.

The *Campaign* purchased airtime to show *Three Wishes* in the Fresno, San Diego, and Sacramento media markets where school and community interventions were also in place. The 30-second paid advertisement aired January through June 1999. During this time period, the total purchase included 729 spots in English and 736 spots in Spanish. These three media markets represented 24 percent coverage of the fourth- and fifth-grade students in California.<sup>31</sup>

*Shaq's Secret* featured Los Angeles Lakers basketball star Shaquille O'Neal. The PSA showed Shaquille O'Neal growing from 3 feet tall to his actual height after eating fruits and vegetables. Eating 5 a Day

# INTRODUCTION

was Shaquille O’Neal’s secret to success on the basketball court. The messages of this PSA were:

- Fruits and vegetables can provide power to play; and
- It is important to eat 5 servings of fruits and vegetables every day.

The PSA was distributed to television stations across California and placed on the air at the discretion of the station. The *Campaign* did not purchase airtime for this spot or track its placement.

Children may also recall television PSAs from previous years highlighting the 5 a Day message. The *Campaign* released four other PSAs between 1993 and 1996, which could have been aired in 1999. These television spots included a mixture of animated segments with *Campaign* characters, and live-action segments with kid-friendly celebrities, including Tower the American Gladiator, the Power Rangers, child stars of the television sitcom Full House, and actress Thora Birch from the movies Monkey Trouble and Clear and Present Danger.

## **Reach in 1999**

During the 1998 to 1999 school year, the *Campaign* was implemented in four regions of California including Fresno, Sacramento, San Diego, and Los Angeles.<sup>†</sup>

Half of the fourth- and fifth-grade students in California reside in these four regions, a potential reach of 492,911 children.<sup>31</sup>

The *Campaign* directly involved nearly 185,000 children in activities at schools, community youth organizations, farmers’ markets, supermarkets, and restaurants/foodservice establishments in the 1998 to 1999 school year. It reached an additional 529,600 children through local promotions and media. Some children were reached multiple times through campaign activities, promotions, and media. On average, this represents 1.4 *Campaign* contacts for every fourth- and fifth-grade student in the four active regions.

## **California Children’s Healthy Eating and Exercise Practices Survey**

The *CalCHEEPS* was developed to fill a gap in the nutrition surveillance of California children. Statewide, there were no population-based, representative surveys of diet and physical activity for children in the upper elementary school grades. This resulted in a lack of information to guide the development and refinement of state programs, including the *California Children’s 5 a Day—Power Play! Campaign*. The survey was developed in 1998 and commenced in 1999 with funds from TCE and the USDA FSP. The *CalCHEEPS* continues to be administered biennially in odd years.



<sup>†</sup> The Los Angeles Region was only active during the second half of the 1998-99 school year, and the *Campaign* did not purchase airtime in the region.



# SAMPLE AND METHODS

In April of 1999, a food diary was mailed to a demographically balanced sample of 2,000 households with 9- to 11-year-old children whose households were registered with an ongoing market research panel. Parental permission was secured for all participants. Parents were asked to assist their child in keeping a diary of foods that the child ate and the physical activities the child undertook on two consecutive school days. For the dietary portion of the survey, families recorded the types and number of servings of nine key food groups including fruits and vegetables, cereal, dry beans, milk products, protein rich foods, soda and sweetened beverages, high-fat snacks, and sweets. These foods were reported for each of six daily eating occasions. Serving size was semi-quantified. A small gift (e.g., pen, pencil, beach ball, or Frisbee) was provided to those who completed and returned the diary. These households were also entered into a raffle to win 1 of 14 Toys “R” Us gift certificates ranging from \$25 to \$100.

By the June 8, 1999 deadline, 814 children completed this part of the survey. The sampling error was +/-5 percentage points at the 95th percent confidence level. A sub-sample of 394 children took part in a follow-up, non-assisted telephone survey on their knowledge, attitudes, and beliefs about healthful eating and physical activity. The response rate was 41 percent for the diary and 51 percent of diary respondents were interviewed for the telephone survey that followed.

The 814 participants were almost evenly divided between boys and girls. Forty-three percent were white, 38 percent Latino, 7 percent African American, and 11 percent Asian/other.<sup>†</sup> Most children were in the fourth or fifth grade. Approximately nine out of ten children attended public school, and 2 percent were home-schooled. Eighteen percent of the children came from households with less than a \$20,000 a year income, and 44 percent came from households with an annual income of \$50,000 or more. One in eight children lived in households receiving Food Stamps.

The white sample was comparable to the 1998 Current Population Survey (CPS) of California in terms of parent’s age, household income, and household size. However, heads of households in the minority samples tended to be younger than the CPS sample. The mail and telephone survey results were weighted to reflect the CPS findings for households with 9- to 11-year-old children based on race/ethnicity, household income, and number of 9- to 11-year-old children living in the household. This report looks at bivariate relationships unadjusted for any other variables.

<sup>†</sup>Asian or Pacific Islander (N = 46) and other (N = 21) children were collapsed due to the small sample size for each group.

# LIMITATIONS

There are limitations on generalizing from this survey. While the response rate was well within the range expected for a parent-assisted mail survey of children, it was lower than other self-administered mail surveys, such as those conducted with employees and customers (e.g., respondents with a vested interest). Second, these respondents are a “best-case” sample. As a market-research panel, the children lived in households that were interested in research and willing to complete the food and exercise diaries. Third, during weekdays children’s schedules are more structured and as a result dietary choices tend to be lower in snacks and fast foods.<sup>32,33</sup> Fourth, market-research panels tend to under-represent African Americans and households with extremely low or high incomes. Finally, all households were English-speaking. These factors could favor higher fruit and vegetable consumption.

In contrast, the time of year was not ideal for fruit and vegetable consumption because the diaries were collected in the early spring, a time of relatively low seasonal availability of fresh produce. Fresh fruits and vegetables are generally preferred over canned or frozen varieties.

In addition, the survey did not explore *Campaign* exposure in all six *Campaign* intervention channels. Only two channels were investigated: media and schools. For media, focus was placed on television spot recall, which included both advertising and PSAs. PSA placement information was not collected from television stations making it impossible to determine the PSA coverage in the State. Questions related to schools emphasized environmental factors, but were not exclusively focused on the *Campaign*. In 1999, CPNS also funded 26 school districts and 1 county office of education to implement nutrition education interventions, focusing on fruits and vegetables, in low-resource public schools. These interventions may also have influenced low-income 9- to 11-year-old children.





# RESULTS

## Where Did Children Report Getting the Food They Ate?

Across all meal and snack times on a typical school day, the majority of children reported getting their food from home, ranging from 75 to 94 percent, with one exception (see table below). At lunch, food was most often obtained from school (53 percent). Children also reported getting breakfast (15 percent) and morning snacks (13 percent) from school. For some children, after-school snacks were provided at day care or a friend’s house (9 percent). Fast food was the second most common source of food reported at dinner (9 percent). See Table 1 on page 30.

Meals and Snacks	Children Reported Getting Food From...	
	Home	School Cafeteria
Breakfast	88	15
Lunch	45	53
Dinner	87	0
Morning snack	75	13
After-school snack	78	4
Evening snack	94	0

Notes. Row percents may not add up to 100 percent due to multiple responses. A subset of response categories is presented in this table.



## RESULTS

### Who Prepared Children’s Meals and Snacks?

Children’s meals and snacks were most often prepared by parents or another adult, schools, and children. Parent/adult and child alone were the top responses to who “most often” makes children’s breakfasts (45 and 40 percent), after-school snacks (44 and 50 percent), and evening snacks (51 and 46 percent). At breakfast, schools were also commonly reported (13 percent). School and parent/adult preparation (42 and 40 percent) were most often reported at lunch; the child alone preparation came in third (16 percent). Dinner was almost always made by a parent/adult (96 percent). A summary of these findings is presented below. See Table 2 on page 31.

Meals and Snacks	Who Fixed Food “Most Often?”
Breakfast	Parent, child, school
Lunch	School, parent, child
Dinner	Parent
After-school snack	Child, parent
Evening snack	Parent, child

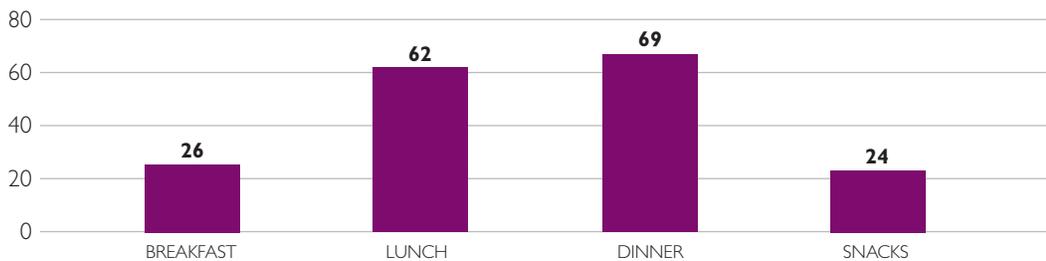
Notes. Responses for who fixed food “most often” are listed from most to least frequent.

### When Did Children Eat Fruits and Vegetables?

As shown below, lunch and dinner were the meals at which children were most likely to report eating 1 or more servings of fruits or vegetables. Only one-quarter reported having a fruit or vegetable at breakfast or for a snack. See Table 3 on page 32.

#### California Children Were Most Likely to Eat Fruits and Vegetables During Lunch and Dinner, 1999

Percent of Children Who Ate a Serving of Fruits or Vegetables



Source: California Department of Health Services, 2004.

# RESULTS

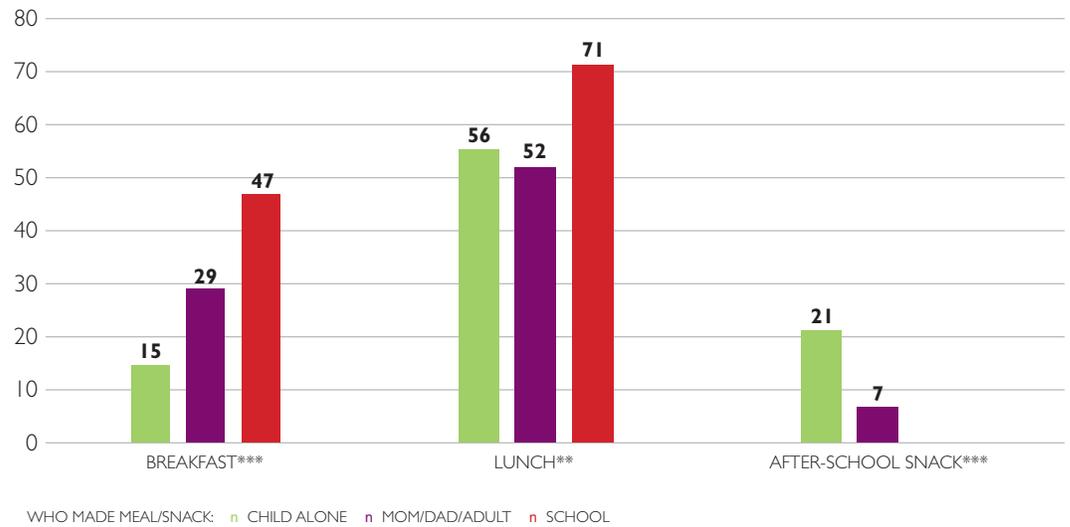


## Who Prepared Meals and Snacks With Fruits and Vegetables?

Significant associations were found among those who made children’s meals and snacks and the child’s fruit and vegetable intake. Children were significantly more likely to eat at least 1 serving of fruit or vegetable at breakfast and lunch if the child reported that the school “most often” made the meal, compared with parent/adult and child alone (see figure below). However, for after-school snacks, children who reported that they alone usually made their snacks were three times more likely to eat a fruit or vegetable than those whose parents most often made the snack. See Table 4 on page 33.

### California Children Were Most Likely to Eat Fruits and Vegetables<sup>†</sup> When the School Prepared Their Meal

Percent of Children Who Ate a Serving of Fruits or Vegetables



\*\*p<.01; \*\*\*p<.001

† Excludes fried vegetables.

Source: California Department of Health Services, 2004.

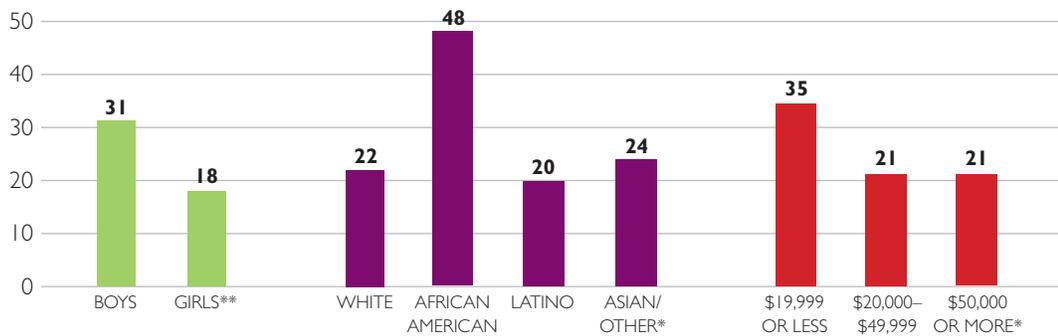
# RESULTS

## Awareness of the Campaign's Television Spots

In 1999, the Campaign purchased airtime for the television advertisement *Three Wishes* in three media markets, which represented 24 percent coverage of the fourth- and fifth-grade students in California.<sup>31</sup> Additionally, PSAs, including *Shaq's Secret*, may have aired in the balance of the State. Survey findings revealed that one-quarter of California children remembered seeing or hearing the Campaign's television spots. As shown in the figure below, the Campaign's television spots were most likely to be recalled by boys ( $p < .01$ ), African American children ( $p < .05$ ), and children who reside in low-income households ( $p < .05$ ). See Table 5 on page 34.

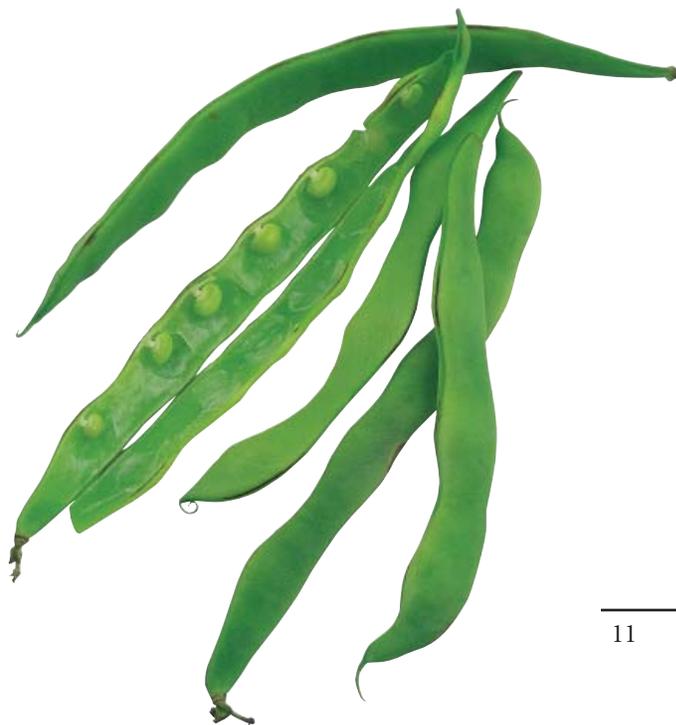
**Boys, African American Children, and Low-Income Children  
Were Most Likely To Recall the Campaign's Television Spots, 1999**

Percent of Children



\* $p < .05$ ; \*\* $p < .01$

Source: California Department of Health Services, 2004.



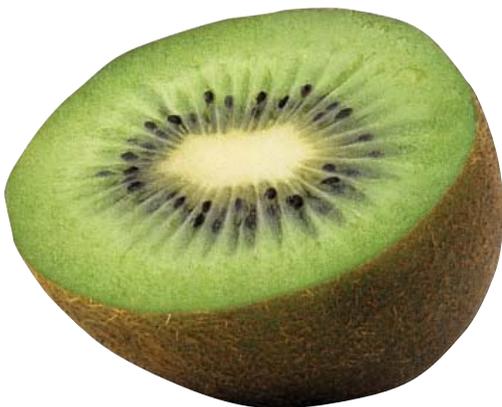
## RESULTS

### What Did Children Report as the Main Idea of the *Campaign's* Television Spots?

Although one out of five children aware of the *Campaign's* television spots could not recall the main idea, over 80 percent of children responded with ideas and comments related to fruits and vegetables, diet, nutrition, healthful eating, and physical activity. Half of the children surveyed identified a specific main idea of the television spots. “Eat 5 servings of fruits and vegetables every day” ranked first among the specific main ideas given by children. Following this, other specific responses included “Have a physically active lifestyle,” “Eating fruits and vegetables is good for your health,” and “5 a Day—Power Play!” Forty-two percent of children commented without providing a specific main idea. Findings are summarized in the table below.

Main Idea of the Television Spots	Child Recall, Percent
<b>Specific Ideas</b>	
Eat 5 servings of fruits and vegetables every day	17
Have a physically active lifestyle	14
Eating fruits and vegetables is good for your health	10
<i>5 a Day—Power Play!</i>	5
Eat a high fiber diet	3
<b>Other Comments</b>	
Other comments related to diet, nutrition, healthful eating	30
Other comments unrelated to diet, nutrition, healthful eating	10
Other comments related to fruits and vegetables	2
<b>Other Responses</b>	
Don't know	20

Notes. Column percent may not add up to 100 percent due to multiple responses.



## RESULTS



### What Did Children Remember About the *Campaign's* Television Spots?

Of the 24 percent of children recalling the *Campaign's* television spots, the messages that children found most memorable were to eat fruits and vegetables, eat healthy, and get regular exercise. Of the top responses, “Eat 5 servings of fruits and vegetables a day” ranked first. Children’s responses fell into five main areas: fruits and vegetables, healthful eating and lifestyle, physical activity, cartoon characters, and music and songs. Child recall is categorized by topic in the table below. Specific examples of the children’s responses are listed in Appendix A.

Memorable Content From the Television Spot	Child Recall, Percent
<b>Fruits and Vegetables</b>	
Eat 5 servings of fruits and vegetables a day	17
Eat fruits and vegetables	8
5 a day gives you the power to play	5
Other fruit and vegetable messages	1
<b>Healthful Eating and Lifestyle</b>	
Eat healthy	15
Healthful lifestyle	5
Other general	2
<b>Physical Activity</b>	
Encouraged regular exercise	7
Showed people playing sports	2
<b>Cartoon Characters and Other Entertainers</b>	
Cartoon to get kids to eat more fruits and vegetables	6
Cartoon of genie and kids	4
Other cartoon character	2
Television stars encouraging 5 servings	1
<b>Music and Song</b>	
Sang song about healthful eating	4
<b>Other Responses</b>	
Don't know	24
None/nothing	12
Other	8

Notes. Column percent may not add up to 100 percent due to multiple responses.



## RESULTS

### Fruit and Vegetable Consumption

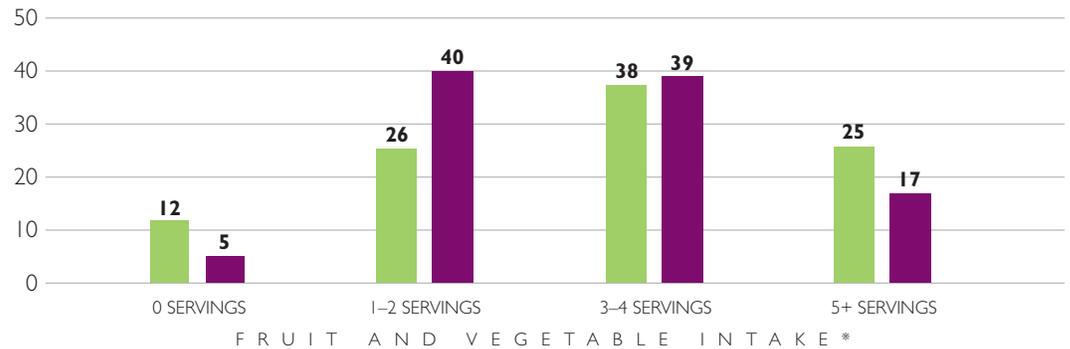
California children ate 3.2 servings of fruits, 100 percent juices, vegetables, and salads on a typical school day, far below the 5 servings recommended for good health. Consumption of fruits and vegetables was slightly higher for children who remembered the *Campaign's* television spots compared with others, but not statistically significant (3.4 vs. 3.2 servings; ns). This difference was primarily due to fruit intake (1.4 vs. 1.1 servings; ns). See Table 6 on page 35.

Awareness of the *Campaign's* television spots was positively associated with meeting fruit and vegetable guidelines. As shown below, children who recalled the television spots were more likely to report eating the recommended daily minimum of 5 servings of fruits and vegetables and less likely to eat only 1 to 2 servings ( $p < .05$ ). Contrary to expectations, these children also reported eating 0 servings of fruits and vegetables more often than others. See Table 7 on page 36.

When looking at the fruit and vegetable intake guidelines separately, only vegetable consumption was associated with *Campaign* awareness. Children recalling the *Campaign's* television spots were twice as likely to meet the recommendation of 3 or more servings of vegetables and salads per day ( $p < .05$ ). Additional research is needed to explore these relationships further.

### California Children Aware of the *Campaign's* Television Spots Were More Likely to Eat 5 or More Servings of Fruits and Vegetables, 1999

Percent of Children



AWARE OF 5 A DAY—POWER PLAY: ■ YES ■ NO/DON'T KNOW

\* $p < .05$

Source: California Department of Health Services, 2004.

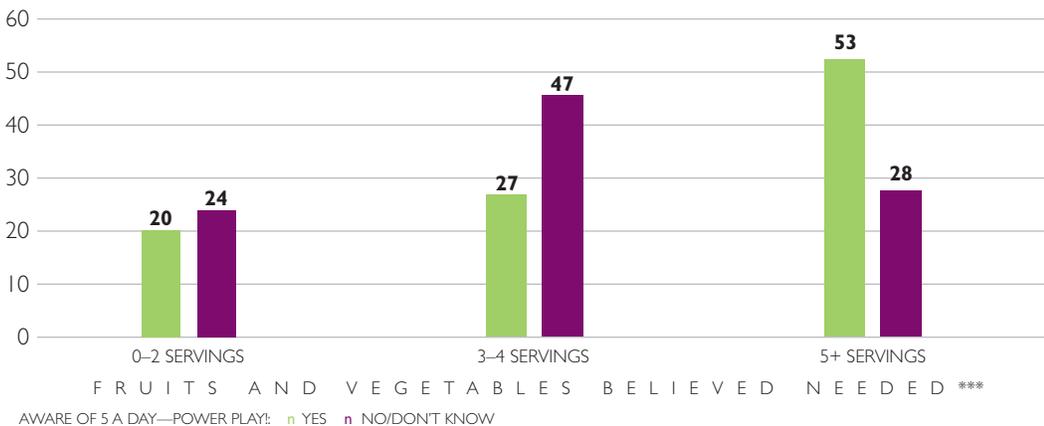
# RESULTS

## Belief in the Number of Servings of Fruits and Vegetables Needed for Good Health

One of the objectives of the *Campaign* is to increase belief among California children in the need to eat 5 or more daily servings of fruits and vegetables. Findings from this survey indicate that exposure to the *Campaign's* television spots was strongly associated with belief in the fruit and vegetable consumption guidelines. Children who recalled the television spots were twice as likely to think they needed the recommended daily amount of fruits and vegetables for good health, with over half identifying a minimum of 5 servings ( $p < .001$ ). These findings are displayed below. Only one in ten of these children reported, "don't know," compared with one in six children not exposed to the *Campaign's* television spots. The majority of the children surveyed (60 percent) also reported that they think they should eat more fruits and vegetables every day. See Tables 8 and 9 on pages 37 and 38, respectively.

### California Children Aware of the *Campaign's* Television Spots Were More Likely to Know That 5 or More Servings of Fruits and Vegetables Are Needed for Good Health, 1999

Percent of Children



\*\*\* $p < .001$

Source: California Department of Health Services, 2004.

## Reinforcement and Food Preference

Among elementary school children, positive reinforcement and food preferences that support healthful eating are key components in predicting fruit and vegetable intake.<sup>30, 34, 35, 36, 37</sup>

If the *Campaign* is successful in influencing these behavioral determinants, the prevalence rates of children agreeing to the following statements should be significantly higher among *Campaign*-aware children compared with others, and the trends should increase over time.

- You get rewarded at school for completing activities about nutrition. (Reinforcement)
- You want to have fruit for an afternoon snack. (Food Preference)

## RESULTS



Exposure to the *Campaign's* television spots was positively associated with getting rewarded at school for completing nutrition activities ( $p < .05$ ), but no significant relationship was found for food preference. In fact, the majority of children in both groups (89 and 90 percent, respectively) reported wanting fruit for an afternoon snack. Thus, *Campaign*-aware children were more likely than others to report that they were rewarded at school for completing nutrition activities, and equally likely to prefer fruit for an afternoon snack as other children. See Table 10 on page 39.

### Physical and Sedentary Activity

The original focus of the *Campaign* was to increase fruit and vegetable consumption. However in 2003, the *Campaign* added the goal of 60 daily minutes of moderate and vigorous physical activity combined and began advancing physical activity components. Before then, physical activity was a secondary message incorporated through images on posters and in television spots. This study provides baseline measures of prevalence for both physical activity and sedentary behavior.<sup>†</sup>

In 1999, fewer than half of California children reported getting 60 daily minutes of moderate and vigorous physical activity combined (46 percent).<sup>5</sup> On a typical school day, children spent 33 percent more time watching television and playing video games than they did on moderate and vigorous physical activity (88 vs. 66 minutes). Sedentary activity was particularly common among African American and Latino children (111 and 92 minutes), as well as those from low-income households and households receiving food stamps (109 and 124 minutes).<sup>38</sup>

Survey results indicated a positive relationship between *Campaign* awareness and one measure of physical activity. The total minutes of vigorous physical activity were significantly higher among children who recalled the *Campaign's* television spots compared with others ( $p < .01$ ). See Table 11 on page 40.

No other relationships were found between children who remembered the *Campaign's* television spots and those who did not for the remaining physical activity and sedentary behaviors surveyed. These were:

- Total minutes exercised,
- Meeting the daily recommendation of 60 minutes or more of a combination of moderate and vigorous physical activity combined,
- Total minutes of sedentary behavior, and
- Meeting the daily recommendation for two or fewer hours of sedentary activity.

# RESULTS

## Belief in the Recommended Amount of Physical Activity Needed for Good Health

Baseline findings indicated that the majority of California children greatly underestimated the amount of physical activity recommended for good health. Only 4 percent of children believed that 30 minutes of active play was needed 14 or more times per week for good health, the amount needed to reach 60 minutes or more per day (see table below). It was clear that children did not know the physical activity goal for youth, because nearly half said 1 to 4 times a week (e.g., 4 to 17 daily minutes) was enough. This belief was similar for all children regardless of their recall of the *Campaign's* television spots. See Table 10 on page 39.

Physical Activity Believed Needed Per Week	Average Minutes Per Day	Percent
1–2 times	4–9	14
3–4 times	13–17	31
5–6 times	21–26	18
7–13 times	30–56	34
14+ times	60+	4

Notes. Physical activity was defined as a minimum of 30-minute sessions of physical activity each time, the amount recommended by the Surgeon General in 1996. Average minutes needed per day was created by multiplying the reported number of times per week by the minimum minutes needed (e.g., 30 minutes) and dividing this number by the seven days in a week.

## School Environment

The school environment plays an important role in the development and support of children's eating and exercise behaviors. The foods and physical activities available to children on school campuses can facilitate healthful or unhealthful choices. In this survey, children's access to vending machines, fast food, school meals, and physical education at school were assessed to help determine and guide the environmental change priorities of the *Campaign*.



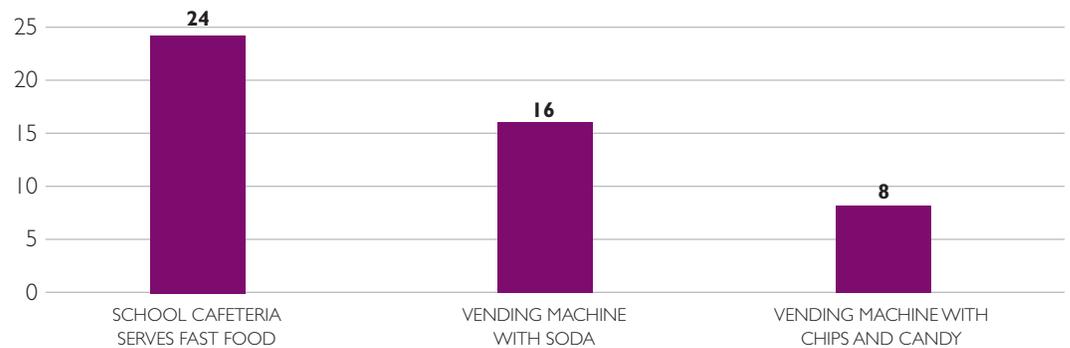
# RESULTS

## Vending Machines and School Meals

In 1999, a quarter of 9-to 11-year-old California children reported that their school cafeteria served branded fast foods from restaurants like McDonalds, Taco Bell, or Pizza Hut (see figure below). Vending machines were less prevalent on elementary school campuses. Sixteen percent of children reported access to soda vending machines, and 8 percent said vending machines stocked with chips, cookies, and candy were available. Children's access to vending machines had strong, negative relationships with consumption of vegetables and salads. Those reporting access to soda vending machines at school ate fewer servings of vegetables (0.7 vs. 1.3 servings;  $p < .001$ ), while vending machines stocked with chips and candy were associated with eating less salad (0.1 vs. 0.3 servings;  $p < .001$ ). See Table 12 on page 41.

**California Children Reported Access to Soda Vending Machines, Candy Vending Machines, and Fast Food on Elementary School Campuses, 1999**

Percent of Children



Source: California Department of Health Services, 2004.



## RESULTS

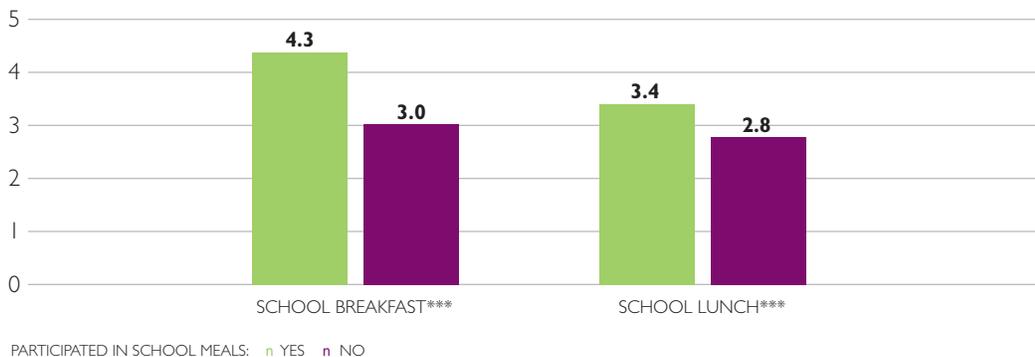
School meal programs were widely available in elementary schools, positively associated with fruit and vegetable consumption, but underutilized by California children. Ninety-four percent of children reported that their schools serve lunch, and 69 percent said school breakfast was available. The majority of children reported eating school meals at least once a week. Seventy-two percent of the children ate school lunch one or more times in a week, while only 41 percent reported daily participation. In comparison with lunch, far fewer children reported getting breakfast from the school cafeteria on a typical school day (53 vs. 15 percent).

Participation in school meal programs was strongly related to fruit and vegetable intake and meeting the 5 a Day goal. On average, children who ate school breakfast consumed over one serving more of fruits and vegetables (4.3 vs. 3.0 servings;  $p < .001$ ) and those eating school lunch had over one-half of a serving more (3.4 vs. 2.8 servings;  $p < .001$ ) compared with children not receiving that school meal (see figure below). Children participating in the school breakfast and lunch programs were also more likely to meet the 5 a Day recommendation than those not eating school meals (37 vs. 17 percent;  $p < .001$ , and 23 vs. 16 percent;  $p < .01$ , respectively).



### California Children Who Participated in School Meals Ate More Servings of Fruits and Vegetables, 1999

Servings of Fruits and Vegetables



\*\*\*  $p < .001$

Source: California Department of Health Services, 2004.

# RESULTS

## **Physical Education**

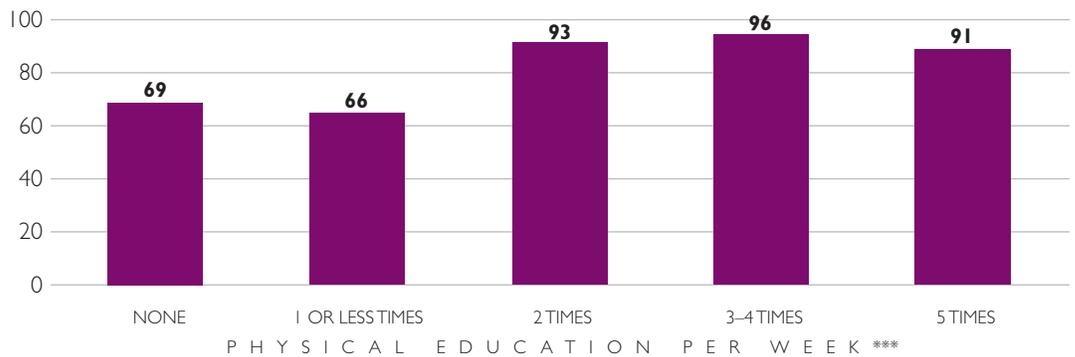
The survey also explored whether schools required children to exercise, aside from recess, and the frequency and duration of physical education classes. Ninety percent of children reported that they had to exercise at school, excluding recess. Findings indicate that this school requirement was significantly associated with total minutes of physical activity. In fact, children who attended schools that made students exercise were significantly more active than others, averaging over 20 minutes more physical activity on a typical school day (84 vs. 63 minutes of total exercise;  $p < .01$ ).

For physical education, children reported attending an average of 2.3 times per week for 33 minutes at a time. Extrapolating these figures over ten school days would give a child 152 minutes of physical education. However, California law requires elementary schools to provide 200 minutes of physical education every 10 school days. Thus, child-reported physical education fell 48 minutes short of the state mandate. Survey findings also suggest a minimum requirement for physical education to increase daily physical activity among children. The number of times per week children participated in physical education classes had a strong, positive relationship with activity levels. As shown below, children participating in physical education two or more times a week reported 22 to 30 minutes more physical activity on a typical school day. See Table 13 on page 42.

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### **California Children Who Participated in Physical Education at Elementary School Two or More Times a Week Reported More Daily Minutes of Physical Activity, 1999**

Minutes of Physical Activity



\*\*\*  $p < .001$

Source: California Department of Health Services, 2004.

# RECOMMENDATIONS AND CONCLUSIONS

## Intervention Implications

These survey results provide a snapshot of a typical school day for 9- to 11-year-old children and highlight directions for future *Campaign* development. Several priority areas were identified to help refine and expand the *Campaign* to improve its impact on fruit and vegetable intake and physical activity among children. In addition, it is hoped that these findings will assist others in the development, expansion, and refinement of effective nutrition education and physical activity interventions for elementary school children.

### Priority 1: Increase Participation in School Meal Programs

- Of all the factors measured, participation in the federal school meal programs showed the strongest positive relationship with fruit and vegetable consumption and meeting the 5 a Day recommendation. Therefore, intervention efforts aimed at improving school meal program participation could dramatically improve fruit and vegetable intake among children.
  - Promote participation in the school breakfast and school lunch programs.

### Priority 2: Increase the Availability and Accessibility of Fruits and Vegetables at Home and in School

- Efforts to improve availability and accessibility should focus on parents and schools, because they prepare most of the meals and snacks for 9- to 11-year-old children. Thus, children are heavily dependent upon their home and school food environments to facilitate healthful eating.
  - This study showed that the majority of children got their food from home for all meal and snack times with the exception being lunch. Many children also reported that their parents usually make their meals and snacks. Regular access to fruits and vegetables at home can increase children's intake.
    - Assure that intervention elements focus on the home environment.
    - Make special efforts to increase parental involvement and support of intervention goals.
  - Schools provided food for many children during breakfast, morning snack, and lunch. They were more likely than parents to make lunch for children. Some children reported access to branded fast food in school cafeterias and vending machines on elementary school campuses. These findings indicate that the school environment is an integral part of successful intervention efforts.
    - Expand the school food and nutrition services component of interventions. Promote open dialogue between students and food and nutrition services staff to improve the school food environment. Work with school food and nutrition services to assess children's preferences and provide appealing and desirable fruit and vegetable options to replace less healthful foods and beverages.



## RECOMMENDATIONS AND CONCLUSIONS



- Work with schools to reduce the prevalence of branded fast foods available in school cafeterias.
- Advocate for healthier fruit and vegetable options in school vending machines.
- Encourage schools to adopt fundraising and reward policies that support and facilitate a healthier environment for children.

### **Priority 3: Empower Children to Make Healthful Food Choices**

- Many children prepared their own breakfast, after-school snacks, and evening snacks. The majority also expressed a desire to have fruit for an afternoon snack. In addition, if children usually made their own after-school snacks, they were three times more likely to eat fruits and vegetables. However, for most children, breakfast and snack times were marked by relatively low fruit and vegetable consumption making these eating occasions prime targets for improvement. Children with the knowledge and skills to make healthful fruit and vegetable choices are better equipped to choose, prepare, and eat fruits and vegetables.<sup>39,40</sup>
- Assure that intervention activities empower children to make healthful fruit and vegetable choices when selecting and preparing breakfast and snack foods.
  - Improve knowledge and skills so children can make informed decisions when preparing food for themselves, particularly breakfast and snacks.
  - Create opportunities for children to practice the skills learned through activities like role playing and field trips.
  - Increase fruit and vegetable preferences by offering taste-testing sessions.
- Encourage children to prepare their own after-school snacks.

### **Priority 4: Address Other Out-of-Home Eating**

- Out-of-home eating is increasingly common as children become more independent. Although most 9- to 11-year-old children ate dinner at home on a typical week night, fast food was the second most common place to eat. Research shows that children eating fast food are more likely than others to consume sweetened beverages, sweets, and high-fat snacks.<sup>38</sup> Efforts to help children make healthful choices when eating away from home can reduce the consumption of high calorie, low nutrient foods.<sup>40,41</sup>
- Incorporate activities that focus on how children can make healthful food choices while eating out at fast food or other restaurants, especially fruit and vegetable selections.

## RECOMMENDATIONS AND CONCLUSIONS

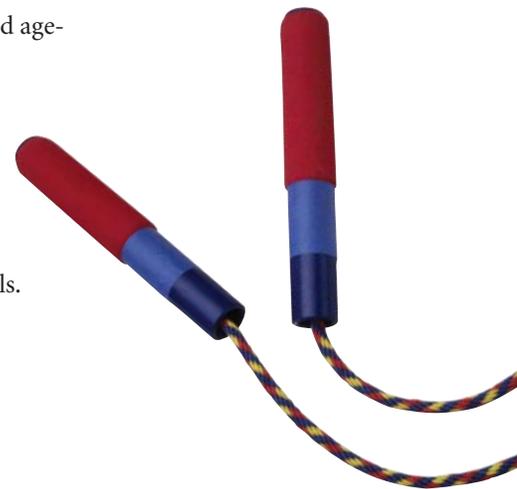
- Encourage families to choose restaurants with healthful and tasty food options that children enjoy.
- Introduce “family night” activities in which the whole family eats together at home.

### **Priority 5: Promote School Physical Education**

- Physical activity, including participation in school physical education, is an essential part of child development and health. Findings from this survey suggest that some California schools do not offer physical education classes. In addition, child-reported physical education fell 48 minutes short of the state biweekly mandate. If all schools required children to exercise and increased the frequency of physical education classes, children would get more daily minutes of physical activity.
- Advocate for schools to offer a minimum of 200 minutes of physical education every 10 school days, the state mandate.
- Aim for a minimum of two physical education classes per week, each lasting at least 50 minutes.
- Provide classroom teachers with the training needed to conduct fun and age-appropriate physical education classes.

### **Priority 6: Promote 60 Minutes of Daily Physical Activity**

- Very few children knew the amount of physical activity recommended for good health. In fact, less than 5 percent correctly reported 60 minutes per day. This is a key area for improvement in future intervention efforts.
- Fully integrate physical activity into intervention activities and materials.
- Expand the promotion of 60 daily minutes of a combination of moderate and vigorous physical activity among children.
- Encourage school and community organization partnerships to offer interventions that promote physical activity.



### **Campaign Evaluation**

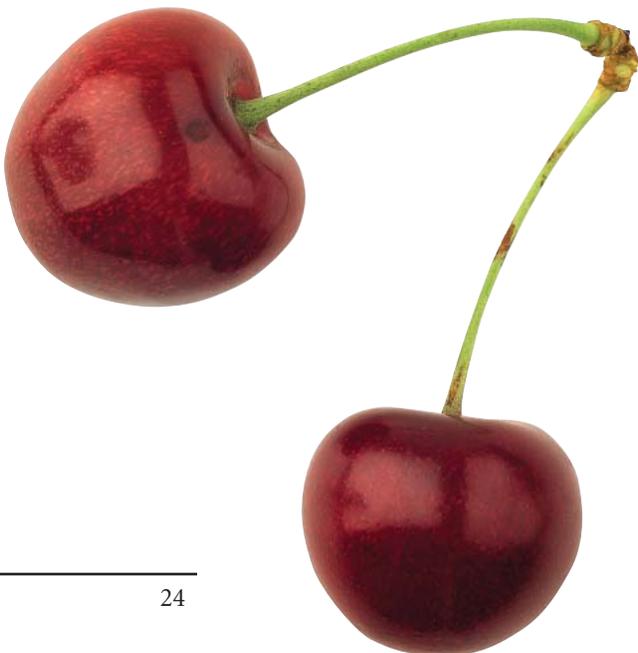
The *Campaign* was successful at reaching 9- to 11-year-old children, particularly low-income children, with targeted television advertisements and PSAs. Across the State, one-quarter of the children surveyed were able to recall the *Campaign's* television spots. Children residing in low-income households were 67 percent more likely than higher income groups to remember the spots.

## RECOMMENDATIONS AND CONCLUSIONS

In addition, the television spots were clear and resonated with the target audience. This was demonstrated by the children's accurate recall of the television spots, especially their ability to remember the main ideas and messages. "Eat 5 servings of fruits and vegetables every day" ranked first among the responses for both the main idea and most memorable message of the *Campaign's* television spots. One-third of the children provided main ideas and messages focused on fruits and vegetables.

Exposure to the *Campaign's* television spots was highly associated with accurate knowledge of the daily fruit and vegetable intake recommendation for good health (e.g., a minimum of 5 servings) and ability to meet that guideline. These results demonstrate the influence of targeted television commercials and PSAs on children. Future *Campaign* efforts should expand the use of television advertising and PSAs to reach more children, more often with the *Campaign* messages.

In 1999, the CDHS funded the *Campaign*, as well as 26 school districts and 1 county office of education charged with implementing nutrition education interventions, focusing on fruits and vegetables, in low-resource public schools. This study highlighted the valuable impact of nutrition lessons and positive reinforcement at school. Over half of the 9- to 11-year-old children surveyed reported receiving lessons at school on food, nutrition, and health.<sup>5</sup> Children involved in school nutrition activities and rewarded for completing them had a heightened awareness of diet and nutrition issues. These children were almost 30 percent more likely to remember the *Campaign's* television spots. Positive nutrition reinforcement within the school environment contributed to enhanced *Campaign* recall. Research also shows that nutrition lessons have a significant relationship with fruit and vegetable intake and healthy weight status.<sup>5</sup> These findings support the continued use of a multi-channel social marketing approach to maximize the *Campaign's* impact on fruit and vegetable intake among children.



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# APPENDIX A

## Messages Recalled From the *California Children's 5 a Day—Power Play! Campaign's* Television Spots

### Fruit and Vegetable

**Eat Fruits and Vegetables:** To be healthy, strong; Eat fruits and vegetables not French Fries or sweets; Makes you stronger, faster, learn better.

**Eat 5 Servings of Fruits and Vegetables a Day:** A reminder to eat 5 servings; Eating 5 servings makes you strong; Said to eat 2 servings of fruit and 3 vegetables a day.

**5 a Day Gives You the Power to Play:** Kids were saying it.

**Other Responses:** There were kids eating and dancing with fruits; Showed kids eating fruits and vegetables.

### Healthful Eating and Lifestyle

**Eat Healthy (Fruits and Vegetables Not Specified):** Encourages healthy eating in a fun way; To eat five times a day; Eat a low-fat diet; Don't eat too much meat; Don't eat sugary or fatty stuff; Vitamins are good for you.

**Healthful Lifestyle (No Eating or Exercise Mentioned):** Promoted health.

**Other Responses:** You got to eat some type of candy, chips and also dairy products.

### Physical Activity

**Encouraged Regular Exercise:** Get out and play; Being active and staying healthy; Exercise three times a week for 30 minutes.

**Showed People Playing Sports:** Basketball, bike riding.

## APPENDIX A

### Cartoon Character

#### Cartoon to Get Kids to Eat More Fruits and Vegetables

**Cartoon of Genie and Kids:** Kids asked genie to make them stronger, genie gives the kids fruit.

**Television Stars Encouraging 5 Servings of Fruits and Vegetables:** Stars from American Gladiators and Power Rangers encouraging you to eat 5 servings a day.

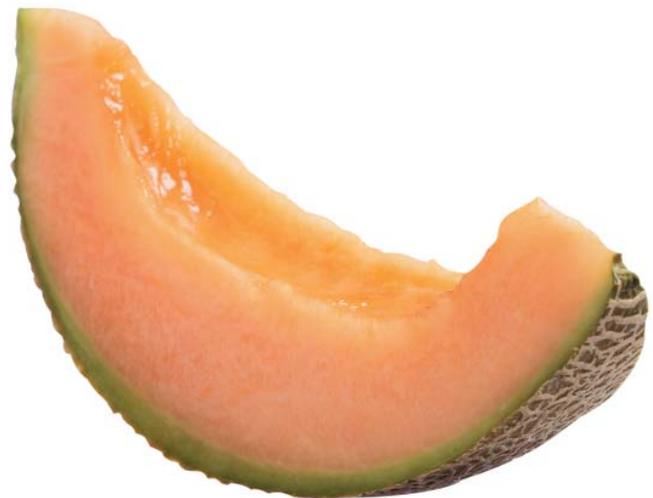
**Other Responses:** Shaquille O'Neal was small in one and he ate vegetables.

### Music and Song

**Sang Song About Healthful Eating:** Five kids singing; Sang "5 a day gives you the power to play."

### Other

**Responses:** They wanted you to buy; Showed kids working on computers, there were kids doing math in it; They made a fruit salad; The man who ate a lot of vegetables was healthier than the man who ate fast food; I remember there was a lot of people in it; People dancing; That it seems important to other kids that they should learn more, they should learn more about school.





# APPENDIX B

## Data Tables

**Table 1: Source of Food Consumed During Weekday Meals and Snacks (Diary Sample)<sup>1</sup>**

Where did you get the food for breakfast, lunch, dinner and snacks?

Food Source	Percent of Children Receiving Food From Each Source by Meals and Snacks					
	Breakfast	Lunch	Dinner	Morning	Midday Snack	Evening Snack
Home	88	45	87	75	78	94
School cafeteria	15	53	0	13	4	
Day care provider or facility/friend's house	1	1	1	5	9	1
Fast food restaurant or food court	1	1	9		3	1
Served by fast food at school	0	2	0	0	1	
Miscellaneous <sup>2</sup>	1	2	5	8	7	4

<sup>1</sup> Reports the responses based on the average over two days.

<sup>2</sup> Miscellaneous represents four collapsed categories including school vending machine, convenience store, other type of restaurant, and other.

0% represents one-half of one percent or less.

No one represented.

Columns may add up to more than 100% due to multiple responses.

## APPENDIX B

**Table 2: Who Most Often Makes Children’s Meals and Snacks (Phone Sample)**

During the school week, who most often makes breakfast/lunch/dinner for you?

During the school week, who most often makes after-school/evening snacks for you?

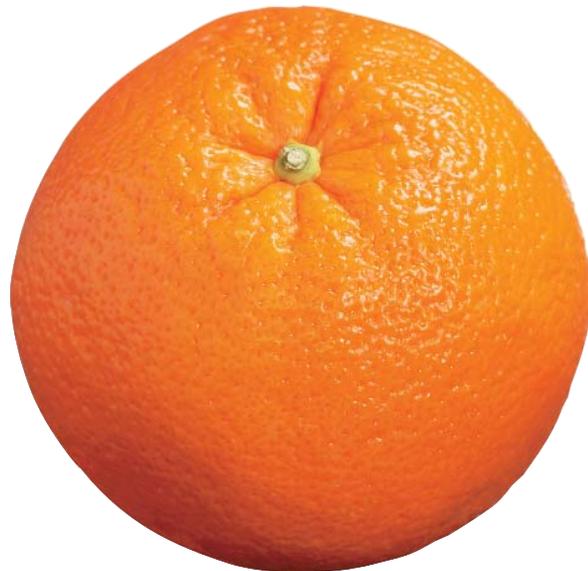
	Who Makes Children’s Meals and Snacks?				
	Mom/Dad/ Adult	Child Alone	Child and Adult	Child With Child	School
<b>Meal Times</b>					
Breakfast	45	40	2		13
Lunch	40	16	2	0	42
Dinner	96	2	2	0	
<b>Snack Times</b>					
After-School Snack	44	50	2	1	3
Evening Snack	51	46	1	0	1

Excludes those reporting “other,” “don’t eat,” and “don’t know.”

0% represents one-half of one percent or less.

No one represented.

Rows may not add up to 100% due to rounding.



## APPENDIX B

**Table 3: Proportion of Children Who Reported Eating 1 or More Servings of Fruits and Vegetables by Meal Times and for Snacks (Diary Sample)**

How many servings of fruits, vegetables, 100% juices, or salads did you eat/drink?

Meal Times	Percent of Children Eating 1 or More Servings of...			
	Fruits and Juices	Vegetables and Salads	Fruits and Vegetables	Fruits and Vegetables <sup>1</sup>
Breakfast	24	1	26	25
Lunch	40	19	62	58
Dinner	15	47	69	63
Snacks	19	3	24	24

<sup>1</sup> Excludes fried vegetables, which primarily consisted of fried potatoes.



## APPENDIX B

**Table 4: Proportion of Children Who Reported Eating Fruits and Vegetables<sup>1</sup> at Meal and Snack Times by Who Prepares the Meal or Snack (Phone Sample)**

How many servings of fruits, vegetables, 100% juices, or salads did you eat/drink?

During the school week, who most often makes breakfast/lunch/dinner for you?

During the school week, who most often makes after-school/evening snacks for you?

Meal Times	Children Eating 1 or More Servings of Fruits or Vegetables at Meals, Percent		
	Mom/Dad/Adult Makes Meal	Child Alone or With Child Makes Meal	School Makes Meal
Breakfast	29	15	47 ***
Lunch	52	56	71 **
Dinner	65	71	N/A

Snack Times	Children Eating 1 or More Servings of Fruits or Vegetables at Snacks, Percent	
	Mom/Dad/Adult Makes Snack	Child Alone or With Child Makes Snack
Morning Snack	N/A	N/A
After-School Snack	7	21 ***
Evening Snack	7	3

<sup>1</sup> Excludes fried vegetables, which primarily consisted of fried potatoes.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\*\* p<.01

\*\*\* p<.001



## APPENDIX B



**Table 5: Percentage of California Children Reporting Awareness of the *Campaign's* Television Spots (Phone Sample)**

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

	Aware of the <i>Campaign's</i> Television Spots, Percent of Children
<b>Total</b>	24
<b>Gender</b>	
Boys	31 **
Girls	18
<b>Ethnicity</b>	
White	22 *
African American	48
Latino	20
Asian/Other	24
<b>Income</b>	
≤\$19,999	35 *
\$20,000-\$49,999	21
≥\$50,000	21
<b>Overweight Status</b>	
Not at Risk	21
At Risk/Overweight	28
<b>Food Stamps</b>	
Yes	14
No	24
<b>Physical Activity</b>	
≥60 minutes	24
<60 minutes	23
<b>School Breakfast</b>	
Yes	27
No	23
<b>School Lunch</b>	
Yes	24
No	24
<b>Nutrition Lesson</b>	
Yes	23
No	25
<b>Exercise Lesson</b>	
Yes	24
No	22

Not aware includes those reporting “no” and “don’t know.”

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\* p<.05

\*\* p<.01

## APPENDIX B

**Table 6: California Children Reporting Awareness of the *Campaign's* Television Spots<sup>1</sup> Associated With Fruit and Vegetable Intake (Phone Sample)**

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

How many servings of fruits, vegetables, 100% juices, or salads did you eat/drink?

	Aware of the <i>Campaign's</i> Television Spots, Percent	
	Yes	No
<b>2 or More Servings of Fruits and Juices</b>		
Yes	46	42
No	54	58
<b>3 or More Servings of Vegetables and Salads</b>		
Yes	23	12
No	77	88
		*
<b>Both 2 or More Servings of Fruits/Juices and 3 or More Servings of Vegetables/Salads</b>		
Yes	10	7
No	90	93
<b>5 or More Servings of Any Fruits and Vegetables</b>		
Yes	25	17
No	75	83

	Aware of the <i>Campaign's</i> Television Spots, Mean	
	Yes	No
<b>Servings of Fruits and Vegetables</b>	3.4	3.2
<b>Servings of Fruits and Juices</b>	1.9	1.7
<b>Servings of Vegetables and Salads</b>	1.5	1.5
<b>Servings of Fruits</b>	1.4	1.1
<b>Servings of Juices</b>	0.5	0.6
<b>Servings of Vegetables</b>	1.2	1.2
<b>Servings of Salads</b>	0.3	0.2

<sup>1</sup> Not aware includes those reporting “no” and “don’t know.”

Column percents may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

ANOVA

\* p<.05

## APPENDIX B



**Table 7: Range in Number of Servings of Fruits and Vegetables Consumed by Awareness of the Campaign's Television Spots<sup>1</sup> (Phone Sample)**

How many servings of fruits, vegetables, 100% juices, or salads did you eat/drink?

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

		Servings of Fruits and Vegetables, Percent of Children			
		0 <sup>2</sup>	1-2	3-4	5+
<b>Total</b>	<b>Percent</b>	<b>7</b>	<b>40</b>	<b>33</b>	<b>20</b>
<b>Aware of the Campaign's Television Spots</b>					
Yes	24	12	26	38	25
No	76	5	40	39	17

<sup>1</sup> Not aware includes those reporting "no" and "don't know."

<sup>2</sup> Categorized as having 0.5 servings or less.

Rows may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\* p<.05

## APPENDIX B

**Table 8: Belief About the Number of Servings of Fruits and Vegetables Needed for Good Health by Awareness of the Campaign's Television Spots<sup>1</sup> (Phone Sample)**

How many total servings of fruits, fruit juice, vegetables, or salads do you think you should eat every day for good health?

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

		Servings of Fruits and Vegetables Believed Needed <sup>2</sup> , Percent of Children			Don't Know
		0–2	3–4	5+	
<b>Total</b>	<b>Percent</b>	<b>22</b>	<b>43</b>	<b>34</b>	<b>15</b>
<b>Aware of the Campaign's Television Spots</b>					
Yes	24	20	27	53 ***	10
No	76	24	47	28	17

<sup>1</sup> Not aware includes those reporting “no” and “don't know.”

<sup>2</sup> Excludes those reporting “don't know.”

Rows may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\*\*\*  $p < .001$



## APPENDIX B



**Table 9: Belief About Personal Success Eating Enough Fruits and Vegetables (Phone Sample)**

Do you think you eat the right amount of fruits and vegetables every day, too much, or do you think you should eat more?

	Belief, Percent of Children		
	Eat the Right Amount or Too Much	Need to Eat More	
<b>Total</b>	<b>40</b>	<b>60</b>	
<b>Gender</b>			
Boys	48	52	**
Girls	34	66	
<b>Ethnicity</b>			
White	37	63	*
African American	66	34	
Latino	42	58	
Asian/Other	31	69	
<b>Income</b>			
≤\$19,999	45	55	*
\$20,000-\$49,999	47	53	
≥\$50,000	33	67	
<b>Overweight Status</b>			
Not at Risk	45	55	
At Risk/Overweight	35	65	
<b>Food Stamps</b>			
Yes	60	40	*
No	39	61	
<b>Physical Activity</b>			
≥60 minutes	43	57	
<60 minutes	38	62	
<b>School Breakfast</b>			
Yes	53	47	*
No	38	62	
<b>School Lunch</b>			
Yes	46	54	**
No	31	69	
<b>Nutrition Lesson</b>			
Yes	44	56	
No	35	65	
<b>Exercise Lesson</b>			
Yes	42	58	
No	36	64	
<b>Aware of 5 a Day</b>			
Yes	41	59	
No	41	59	

Excludes those reporting “not sure.”

Rows may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\* p<.05

\*\* p<.01

## APPENDIX B

**Table 10: California Children Reporting Awareness of the *Campaign's* Television Spots<sup>1</sup> Associated With Reinforcement, Food Preference, and Physical Activity Beliefs (Phone Sample)**

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

	Aware of the <i>Campaign's</i> Television Spots, Percent	
	Yes	No
<b>Reinforcement</b>		
<b>Receive Reward for Completing Nutrition Activities</b>		
Agree	61	48
Disagree	39	52
<b>Food Preference</b>		
<b>Want Fruit for Afternoon Snack</b>		
Agree	89	90
Disagree	11	10
<b>Physical Activity Belief</b>		
<b>Times of Physical Activity for 30 or More Minutes Per Week Believed Needed</b>		
1–2	10	15
3–4	28	32
5–6	27	15
7+	35	38

<sup>1</sup> Not aware includes those reporting “no” and “don’t know.”

Column percents may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

Chi Square Test

\*  $p < .05$



## APPENDIX B

**Table 11: California Children Reporting Awareness of the *Campaign's* Television Spots<sup>1</sup> Associated With Physical and Sedentary Activities<sup>2</sup> (Phone Sample)**

Do you recall seeing or hearing any commercials that promoted an educational program called *5 a Day—Power Play!*?

	Aware of the <i>Campaign's</i> Television Spots, Mean	
	Yes	No
<b>Minutes Exercised by Intensity</b>		
Light Exercise	17	17
Moderate Exercise	24	32
Vigorous Exercise	52	33
<b>Total Minutes Exercised</b>	93	82
<b>Minutes Watched Television and Played Video Games</b>	84	81

	Aware of the <i>Campaign's</i> Television Spots, Percent	
	Yes	No
<b>Sedentary Activity</b>		
≤2 Hours	77	79
>2 Hours	23	21
<b>Total Minutes Exercised</b>		
<30 Minutes	17	13
30–59 Minutes	19	26
60+ Minutes	64	62

<sup>1</sup> Not aware includes those reporting “no” and “don’t know.”

<sup>2</sup> This includes time spent watching television/videos and playing video/computer games for fun.

Column percents may not add up to 100% due to rounding.

A box around a group of numbers signifies that differences observed within this group are statistically significant.

ANOVA

Chi Square Test

\*\* p<.01

## APPENDIX B



**Table 12: Prevalence of School Environment Factors Reported by California Children (Phone and Diary Samples)**

Does your school have a vending machine filled with snacks, chips, cookies, or candy that students can use?

Does your school have a soda vending machine that students can use?

Does your school cafeteria serve students fast food made by restaurants like McDonald's, Burger King, Taco Bell or Pizza Hut?

Does your school ever make its students exercise during school (other than recess)?

	Percent of Children Reporting School Environment Factors
<b>School Vending Machine With Soda</b>	
Yes	16
No	84
<b>School Vending Machine With Chips and Candy</b>	
Yes	8
No	92
<b>School Cafeteria With Fast Food</b>	
Yes	24
No	76
<b>School Makes Students Exercise</b>	
Yes	90
No	10

## APPENDIX B

**Table 13: Frequency of School Physical Education Classes by Average Minutes of Physical Activity (Phone Sample)**

About how often did you have to attend gym or physical education class?  
Number of minutes you spent doing each exercise or activity.

Physical Education Classes	Percent	Mean Minutes of Physical Activity
<b>Times Per Week</b>		
None	17	69 <sup>ab</sup> *** 66 <sup>a</sup> 93 <sup>bc</sup> 96 <sup>c</sup> 91 <sup>bc</sup>
≤ 1	19	
2	26	
3-4	20	
5	18	

Excludes those reporting “don’t know” how often.

A box around a group of numbers signifies that differences observed within this group are statistically significant. Categories sharing a common superscript (a,b,c) are not statistically different from each other (Tukey’s test at a procedure-wise error rate=.05).

ANOVA

\*\*\* p<.001



The *California Children's 5 a Day—Power Play! Campaign* is a statewide public health initiative that empowers 9- to 11-year-old children to consume 5 or more servings of fruits and vegetables and engage in at least 60 minutes of physical activity every day. The *Campaign* is administered in part by the Public Health Institute and is led by the California Department of Health Services in cooperation with the National 5 A Day Program.

**For more information,**  
visit us at [www.ca5aday.com](http://www.ca5aday.com) or  
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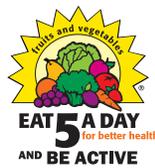
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Funding for the 1999 *California Children's Healthy Eating and Exercise Practices Survey* and the *California Children's 5 a Day—Power Play! Campaign* was provided by The California Endowment and the United States Department of Agriculture Food Stamp Program, an equal opportunity provider and employer, helping limited income Californians buy more nutritious foods for a healthier diet.

**Suggested citation:**

Keihner, A. J., Garbolino, T., & Hudes, M. (2004). *Findings from the 1999 California Children's Healthy Eating and Exercise Practices Survey: Intervention implications and Campaign evaluation*. Sacramento, CA: California Department of Health Services.





California Department of Health Services  
Public Health Institute  
September 2004