

# California Food Guide

## Life Cycle: 4 to 8 Year Olds

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### What's New?

- Childhood overweight is at epidemic levels in California and the United States with the percentage of overweight children having tripled since 1968.
- Studies confirm the link between good nutrition and children's cognitive development and performance in school.
- Dietary guidelines, referred to as Dietary Reference Intakes (DRIs), have been established for the 4-8 year old age group.

### Public Health Implications

Current research results indicate three major areas of concern for children:

- Increased incidence of at risk for overweight and overweight.\*
- Increased risk and occurrence of type 2 diabetes.
- Decrease in physical activity.

### Definition

Healthy People 2010 outlines a national strategy for improving the health of Americans during the decade of 2001 to 2010. It is recommended that children eat a wide variety of foods; with an emphasis on fruits, vegetables, and whole grains; and consume enough calories to support growth and development so that they reach and maintain suggested body weight. The adoption of a low-fat diet (of not more than 30 percent of total calories from fat) is encouraged in the prevention of chronic disease.

\* CDC recommends using the terms "at risk for overweight" (body mass index [BMI]  $\geq$  85<sup>th</sup> percentile and  $<$  95<sup>th</sup> percentile, using CDC 2000 Growth Charts) and "overweight" (BMI  $\geq$  95<sup>th</sup> percentile) for pediatric overweight.

Four- to eight-year-olds are a “teachable” group and at a developmental age when food habits are still being formed and peer pressure is minimal. Television advertising can counteract nutrition education efforts so it is recommended to minimize exposure and promote physical activity in addition to healthy eating.

The most recent DRIs have an age category for 4-8 year olds. However, other reports and studies group children into different age categories, e.g., 2-5 year olds and 6-11 year olds. Because of this, some of the data from various studies overlap into more than one DRI age group.

### **Food Pattern and Nutrient Intakes**

National studies indicate that most children in the 4-8 year old group are not meeting the Dietary Guidelines for Americans. Although intakes of fat and saturated fat are declining, overall diet quality showed little or no improvement between 1994 and 1996.

The United States Department of Agriculture (USDA) 1989-91 Continuing Surveys of Food Intakes by Individuals (CSFII) examined food patterns of 3,307 youth in relation to the USDA Food Guide Pyramid recommendations. The mean number of servings per day was below recommended levels for all food groups, except dairy. Percentages of youth meeting recommendations for fruit, grain, meat, and dairy averaged 30 percent. The percentage of those meeting the recommendation for vegetables was 36 percent. Sixteen percent of youth did not meet any recommendations. None of the 2-5 year olds and less than one percent of the 6-11 year olds met the recommendations for all five Food Guide Pyramid groups.<sup>1</sup>

The 1994 CSFII found that more children were meeting the dietary guidelines for fat and saturated fat than in 1989.<sup>2</sup> In particular, only two percent of the low-income children (low income is defined as households with a gross income greater than 130 percent of the federally established poverty threshold) drank low-fat milk, compared to 57 percent of the children in the highest income group (high income defined as above 350 percent of the federally established poverty threshold).<sup>3</sup> Furthermore, the average fat intake as a percentage of energy intake was 35 percent and did not vary among age, sex, racial/ethnic, or income groups.<sup>4</sup> Results also found that relatively more calories and nutrients in the child's diet were coming from snacks in 1994 compared to 1989.

In the 2001 California Health Interview Survey (CHIS), parents of 12,592 children ages 2-11 reported the number of servings of fruits and vegetables consumed in a 24-hour period. No differences were found between males and females ages 2-4; but as children got older (ages 5-11) fewer servings of fruits and vegetables were consumed. Less than half (47.2 percent) met the five a day recommendations of greater to or equal to five servings a day, including fried potatoes.<sup>4</sup> A higher proportion of children from households with incomes below 200 percent of the federal poverty level consumed five or more servings than do children in the income groups above 300 percent of the poverty level.<sup>4</sup>

The recommended number of grams of dietary fiber per day for children over the age of two is the age of the child plus five. This is often referred to as the *age + 5* rule. The 2001 CHIS found that only 45 percent of 4-6 year olds consumed adequate dietary fiber to meet the *age + 5* rule. Those who met this guideline did so by consuming significantly more breads and cereals, fruits and vegetables, legumes, nuts, and seeds. Those who met the *age + 5* rule had significantly higher adjusted intakes of dietary fiber, vitamins A and E, folic acid, magnesium, and iron.<sup>5</sup> Children with low dietary fiber intakes had significantly higher energy-adjusted intakes of fat and cholesterol.<sup>5</sup>

According to the Healthy Eating Index (HEI) in 1998, 83 percent of the 4-6 year olds and 88 percent of the 7-9 year olds had diets classified as "needs improvement" or "poor." HEI, which examines the diet quality of Americans, found that much of the decline in diet quality occurs between the age groups 2-3 and 4-6. Moreover, the overall HEI scores have not changed significantly from 1989 to 1998.<sup>6</sup>

**Table 1: Percent of Children Not Meeting the Dietary Guidelines in the United States, 1989-2001**<sup>1-6</sup>

<b>Food Inadequacies</b>	<b>1989-91 (CSFII)*</b>	<b>1989-98 (HEI)</b>	<b>1994 (CSFII)</b>	<b>2001 (CHIS)*</b>
Vegetable servings	64%			43-57%
Fruit servings	70%			43-57%
Grain servings	70%			
Milk, lowfat			43-98%	
Meat servings	70%			
Fiber servings				55%
No Food Pyramid recommendations met	100% (2-5 yr.) 16% (youth)			
Needs improvement or poor diet		83-88%		
Calories from snacks			Increased	

\* Percentages are approximations only.  
Sources: See reference citations as listed in the table title above.

## Ethnic Differences

Research indicates that there are disparities by sex and between racial and ethnic groups in the prevalence of at-risk for overweight and overweight.<sup>7</sup> In the 1999-2000 National Health and Nutrition Examination Survey (NHANES), the percent of Mexican-American children ages 6-11 were more likely to be overweight (24 percent) than non-Hispanic black children (20 percent) and non-Hispanic white children (12 percent).<sup>8</sup> As a result of at-risk for overweight and overweight, type 2 diabetes is on the rise in American children, especially African Americans, Latinos, and Native Americans.<sup>9</sup>

In the 2001 CHIS, Asian children consumed the least number of fruit and vegetable servings compared to other racial and ethnic groups. Latino children were found to be more likely than white children (51.7 percent vs. 45.8 percent) to eat five or more servings.

In San Diego, the Study of Children's Activity and Nutrition (SCAN) examined dietary differences among 351 Anglo- and Mexican-American preschoolers (mean age 4.4 years).<sup>10</sup> In both groups, nutrients most likely to be inadequate were iron, zinc, vitamin D, vitamin C, and niacin. However, the Mexican-American children tended to consume a more nutrient-dense diet than the Anglo children. Compared to Anglos, the Mexican-American children consumed more corn tortillas, beef, chicken, turkey, hot dogs, and less milk, bread, and fruit. Although food choices may vary across ethnic groups, other California data indicate that vegetable and, to some extent, meat intake is low among 2-5 year-olds regardless of socioeconomic or ethnic background.<sup>11-12</sup>

## Incidence and Prevalence

There has been a significant increase in the number of children who are overweight in the United States over the last 40 years. Results from the 1999-2000 NHANES indicate that an estimated 15 percent of children and adolescents 6-11 years of age are now overweight while in the 1960s there were four percent.<sup>10</sup> Children are considered overweight if their body mass index (BMI) is at or above the 95<sup>th</sup> percentile for their age and gender.

Similarly, prevalence of overweight has increased among low-income preschoolers, tracked through the Pediatric Nutrition Surveillance System (boys: from 6.6 percent in 1983 to 8.3 percent in 1995 and girls: from 7.2 percent in 1983 to 9.0 percent in 1995). Across a number of studies, the prevalence of overweight is relatively high in African-American, Hispanic, and Native-American children and may be related to the effects of poverty on early development.<sup>13</sup> The trends toward increased childhood overweight are of concern, as obesity persists into adulthood in approximately 50 percent of the overweight children and adolescents.<sup>14</sup>

Both at-risk of overweight and overweight in children have been increasing while fitness has been decreasing. Of children aged 5-10 who are overweight, 61 percent have one

or more cardiovascular disease risk factors, and 27 percent have two or more. With the increase in at-risk of overweight and overweight among children, type 2 diabetes, previously referred to as “adult-onset” diabetes, has also risen in numbers among children and adolescents.<sup>14</sup>

In conclusion, the percent of children who are overweight continues to increase. This is of concern because it has been found that children who are overweight often grow up to be overweight and obese adults and, as a result, are at greater risk of chronic disease such as heart disease, diabetes, and cancer.<sup>10</sup>

### **Trends/Contributing Factors**

There is a growing trend to increase the use of dietary supplements by children as well as the general population. Parents and caretakers need to be informed that children need a variety of nutritious foods that cannot be replaced by supplements.

The nutrient density of children’s diets has decreased as energy intakes have increased. Much of the decrease in the nutrient density appears to be attributable to beverage choices. While the consumption of milk and milk products has decreased, the increase of beverages low in nutrients has increased.<sup>6</sup> Children have also reduced their fat intake since 1977, but they still consume too much fat and saturated fat.<sup>15</sup>

Children are snacking more frequently and many of the snacks are being obtained away from home. In 1977-78, children ate 1.1 snacks per day, compared with 1.8 snacks in 1994-96.<sup>15</sup>

Overweight children and adolescents have a 70 percent chance of becoming overweight or obese adults.<sup>16</sup> This increases to 80 percent if one or more parent is overweight or obese. Both children and adults who are overweight and obese are at risk for health problems including heart disease, type 2 diabetes, high blood pressure, and some forms of cancer. Because of societal pressures, poor self-esteem, and depression sometimes accompany overweight and obesity.

Overweight in children is caused by many factors. Environmental factors and healthy lifestyles such as lack of physical activity and unhealthy eating patterns allow for the genetic expression of overweight. Most overweight children who are still growing should not need to lose weight, but can maintain their weight or reduce their rate of weight gain by limiting food portions and increasing activity levels so they can “grow into” their weight. Calorie restriction of any kind can result in stunting of growth in height and should be carefully supervised by a physician. Weight loss, if initiated and supervised by a physician, should be gradual. A healthy lifestyle to promote weight control should be considered a life-long endeavor.<sup>17</sup>

The proportion of energy consumed away from home continues to increase among children and adolescents. The CSFII data suggest that almost one-third of total energy

intake is consumed outside of home. Foods consumed away from home tend to be lower in fiber and calcium, and higher in total and saturated fat.<sup>15</sup> Fast food consumption is extremely prevalent in American society, and a steady diet of burgers, fries, and soda may significantly increase the calories, fat, and sugar intake of children. CSFII data indicates that children who ate fast food, compared with those who did not, consumed more total energy, more energy per gram of food, more total fat, more total carbohydrate, more added sugars, more sugar-sweetened beverages, less fiber, less milk, and fewer fruits and non-starchy vegetables.<sup>18</sup>

## **Common Concerns/Strategies**

### ***Nutrition and Learning***

Nutrition plays a powerful role in the physical, emotional, and intellectual development of children and their ability to learn. Research supports this by providing compelling evidence on how inadequate nutrition and hunger influences children's behavior, their school performance, and their overall cognitive development.<sup>19</sup> Additionally, students who eat breakfast at school have lower rates of absenteeism and tardiness and are less likely to have behavior problems.<sup>20</sup> Another study by the University of California at Davis shows that school breakfast participation is linked to higher test scores, particularly among poor children.<sup>21</sup>

As children begin school, they can participate in the National School Lunch Program (NSLP) and School Breakfast Program (SBP). NSLP provides one-third of the Recommended Dietary Allowance (RDA) for age while SBP provides one-fourth of the RDA over the school week. Meals must meet nutrition standards established by USDA as well as the Dietary Guidelines for Americans.

### ***Physical Activity***

Changes in the eating habits and physical activity of children appear to be major factors in the rising rates of at risk for overweight and overweight. The Surgeon General's report Call to Action to Prevent and Decrease Overweight and Obesity outlined the need for a comprehensive nutrition education and physical activity program to assist in preventing continued increase in childhood overweight and to promote health.<sup>17</sup> The American Academy of Pediatrics suggests including daily physical activity and limiting the amount of television per day to one to two hours.

Physical activity can help combat the increase in overweight; however, it is important to monitor the eating habits of young athletes. A balanced diet is essential with adequate calories and fluids to support energy and optimize performance. It is recommended that children drink plenty of water before and during exercise. Water is the preferred beverage. Sodas and other high sugar beverages are not suggested because they can cause cramping, nausea, and diarrhea as well as provide many empty calories.

### ***Eating Disorders***

Eating disorders can be of concern, especially as children head into adolescence. Even girls as young as first grade have expressed interest in wanting to be thinner and are sometimes dieting or otherwise trying to lose weight by skipping meals.<sup>22</sup> Girls seem to be particularly at risk for developing a poor body image. They see society's obsession with thinness and then starve themselves (anorexia nervosa) or binge and purge (bulimia).

Although eating disorders are generally not a problem until after puberty begins, parents should be aware of danger signs a child may exhibit. Preoccupation by adults or the child with weight and size, a drastic reduction in food intake, or a lack of weight gain despite a large appetite can mean a child may have an eating disorder. Eating disorders can lead to serious health problems and even death; however, counseling can successfully guide these children through this precarious time.

### ***Dietary Supplements***

Only limited scientific data is available on the use of vitamin requirements and supplements in children because of ethical, cost, and time concerns. Additionally, it is believed by some that meeting recommended intakes for nutrients would not necessarily provide enough for individuals already malnourished, nor is it believed that they would be adequate for some diseases marked by increased nutritional requirements. Supplemental vitamins can be expensive and unnecessary for healthy children older than one year who consume a varied diet.<sup>23</sup>

### **Opportunities for Improvement**

- 1) Most children do not meet the dietary recommendations and those who do tend to consume too much fat and sugar. Meanwhile, there is a growing trend for children to eat more meals away from home and to consume more of their calories from snacks. Parents need to be encouraged to provide lower fat and sugar choices with emphasis on variety and portion control.
- 2) Parents and caregivers should model healthy patterns of eating and exercise. Necessary assistance should be provided to help them adopt a healthy lifestyle that includes more physical activity and regular meals for good health and development.
- 3) Children should receive education about the importance of good nutrition.
- 4) Parents, caretakers, and health care providers need help in understanding and addressing the impact of environmental, psychological, and social factors on childhood at risk for overweight and overweight.

Listed below are the Dietary Guidelines for Americans 2005 (Dietary Guidelines) specific for ages 4-8 years old. These Dietary Guidelines provide science-based recommendations to promote health and reduce the risk of chronic disease through diet and physical activity.<sup>24</sup>

**Table 2: Daily Recommendations<sup>24</sup>**

Calories	Gender	Sedentary	Moderately Active	Active
	Girls	1,200	1,400-1,600	1,400-1,800
	Boys	1,400	1,400-1,600	1,600-2,000
Grains/Breads* (1 ounce = 1 serving)	Girls	4	5	5-6
	Boys	5	5	5-6
Fruits (1/2 cup = 1 serving)	Girls	2	3	3
	Boys	3	3	3-4
Vegetables** (1/2 cup = 1 serving)	Girls	3	3-4	3-5
	Boys	3	3-4	3-5
Milk/Milk Products***	Girls	2	2-3	2-3
	Boys	2	2-3	3
Meat (lean)/Meat Alternates (beans)	Girls	3 ounces	4-5 ounces	4-5 ounces
	Boys	4 ounces	4-5 ounces	5-5.5 ounces
Discretionary calorie allowance****	Girls	171	171-132	171-195
	Boys	171	171-132	132-267
Fiber	Child's age + 5 rule equals the number of grams of fiber			
Oils/Fats*****	It is recommend that children, two years old and up, gradually begin to adopt a lower fat diet so that by age five their diets contain no more than 25-35% of calories as fat. While some have argued that lower-fat diets in early childhood may be necessary to prevent obesity and chronic disease later in life, others are concerned that lower-fat diets may be too restrictive for young children and result in poor growth and mineral deficiencies.			
Physical Activity	Engage in at least 60 minutes on most days of the week.			

Source: See reference citation listed by Table 2 title.

\*Low-fat and low-sugar forms were used. Discretionary calories are to be used if products higher in fat and sugar are consumed. At least half the grains should be whole grains.

\*\*Only vegetables with no added fats or sugars were used. Discretionary calories are to be used if products higher in fat and sugar are consumed. A variety of dark green vegetables, orange vegetables, legumes, starchy vegetables, and other vegetables should be consumed over a week's time.

\*\*\*Most milk, yogurt, and cheese products consumed should be fat-free or low-fat. Calcium-fortified soy beverages are an option for those who want a non-dairy calcium source.

\*\*\*\*The discretionary calorie allowance is the remaining amount of calories in each calorie level after nutrient-dense forms of foods in each food group are selected. For individuals needing to lose weight, discretionary calories may be disregarded.

\*\*\*\*\*Emphasis should be placed on polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils, while limiting saturated and trans fats to less than ten percent of total calories. Other examples of unsaturated and polyunsaturated fats include oils and soft margarines without trans fats. Examples of saturated and trans fats include those solid at room temperature. Trans fats are fats added to foods during processing, cooking, or at the table.

Additional information and a more in-depth discussion on the Dietary Guidelines and subsequent dietary recommendations are available and can be downloaded at: <http://www.health.gov/dietaryguidelines/dga2005/document/>.

## **Resources/Web Sites**

- American Dietetic Association (ADA) – Information on locating a nutrition professional, nutrition tips, and a monthly feature on a variety of nutrition-related topics. [www.eatright.org/Public](http://www.eatright.org/Public)
- Feeding Kids Newsletter by Connie Evers, MS, RD – Promotes nutritional health and provides nutrition information and related activities to assist in teaching children and adolescents. [www.nutritionforkids.com](http://www.nutritionforkids.com)
- Healthy Schools, Healthy People School Network for Absenteeism Prevention (SNAP) – Food safety information for school-age children with emphasis on hand hygiene. <http://www.itsasnap.org/index.asp>
- MyPyramid - 2005 IOM Report on Preventing Childhood Obesity <http://www.iom.edu/project.asp?id=25044>
- Centers for Disease Control and Prevention (CDC) – Information provided on a variety of health-related topics, e.g., nutrition, physical activity, food safety, etc., and on coordinated school health programs. [www.cdc.gov/](http://www.cdc.gov/)  
[www.cdc.gov/HealthyYouth](http://www.cdc.gov/HealthyYouth)  
[www.cdc.gov/nccdphp/dnpa/physical/recommendations/young.htm](http://www.cdc.gov/nccdphp/dnpa/physical/recommendations/young.htm)
- United States Department of Agriculture (USDA) Child Nutrition Programs – Information on the USDA Child Nutrition Programs including the National School Lunch and School Breakfast Programs, Child and Adult Care Food Program, Summer Food Service Program, and After School Snack Program. <http://schoolmeals.nal.usda.gov/>
- United States Food and Drug Administration (FDA) – Information on dietary supplements, foodborne illness, mad cow disease, West Nile virus, product recalls, in addition to several other food and drug-related topics. [www.fda.gov/](http://www.fda.gov/)

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