

DOCUMENT RESUME

ED 382 599

SP 035 962

AUTHOR Mikow, Victoria A.  
TITLE Adolescent Nutrition and Physical Fitness. Selected Indicators. Findings for 9th-12th Grade Students from the 1993 North Carolina Youth Risk Behavior Survey.  
INSTITUTION North Carolina State Dept. of Public Instruction, Raleigh. Div. of Development Services.  
PUB DATE 95  
NOTE 37p.  
PUB TYPE Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)  
  
EDRS PRICE MF01/PC02 Plus Postage.  
DESCRIPTORS Adolescents; Athletics; At Risk Persons; \*Body Weight; Eating Disorders; \*Eating Habits; \*Exercise; Health Related Fitness; High Schools; \*High School Students; \*Nutrition; Physical Education; \*Physical Fitness; Self Concept; Sex Differences; Student Behavior  
IDENTIFIERS \*North Carolina

ABSTRACT

A survey of 2,439 high school students (the 1993 Youth Risk Behavior Survey) in North Carolina found that students present a mixed picture of healthy and risky physical, nutritional, and weight management practices. The survey examined perception of body weight; weight control by gender; method of weight control; consumption of fruit or fruit juice, vegetables, fatty meats, other fatty foods, and sweets; aerobic exercise; toning or strengthening exercise; number of days participated in school physical education classes; and number of school and nonschool sports teams. Findings show that, while a large proportion of students are practicing healthy behaviors, a nearly equal proportion of students have established some high risk health behaviors. Over half of all female students were trying to lose weight, compared to one in five male students. Weight management behaviors included exercise, dieting, vomiting, and diet pills. Large numbers of respondents reported not eating any fruit or vegetables on the day prior to the survey, and they tended to eat a lot of fatty meats and sweets. About one in five students reported not exercising at all during the week prior to the survey. Over half did not participate in any physical education classes. Selected questions from the survey questionnaire are appended. (JDD)

\*\*\*\*\*  
\* Reproductions supplied by EDRS are the best that can be made \*  
\* from the original document. \*  
\*\*\*\*\*

SP

# Selected Indicators of Adolescent

ED 382 599

# Nutrition & physical fitness



"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

E. Brustack

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Division of Development  
and Evaluation Services  
Accountability Services Area  
North Carolina Department  
of Public Instruction

Bob Etheridge, State Superintendent

1995

U.S. DEPARTMENT OF EDUCATION  
Office of Educational Research and Improvement  
EDUCATIONAL RESOURCES INFORMATION  
CENTER (ERIC)

- This document has been reproduced as received from the person or organization originating it
- Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

210 35962

---

**SELECTED INDICATORS OF**  
**ADOLESCENT NUTRITION AND PHYSICAL FITNESS**

FINDINGS FOR 9TH-12th GRADE STUDENTS  
FROM THE 1993 NORTH CAROLINA YOUTH RISK BEHAVIOR SURVEY

Prepared by  
Victoria A. Mikow, PhD

Division of Development and Evaluation Services  
Accountability Services Area

North Carolina Department of Public Instruction  
Bob Etheridge, State Superintendent

---

## FOREWORD

All students in North Carolina's public schools have the right to receive the very best education possible. But, in order to learn, students have to be healthy. Adolescence is usually considered to be the healthiest period of life. Unfortunately, a large proportion of North Carolina's high school youngsters are engaging in activities that place their health at risk.

This report takes a look at how teenagers are eating, exercising, and attending to their weight. Its findings suggest that there are areas for concern for about half of our state's high school students.

Although it is encouraging to note that about half of our high school students report that they practice healthy fitness, nutritional, and weight behaviors, too many teenagers are not eating well, are not exercising, and are using some particularly high risk weight-management practices. Much needs to be done to assist our teenagers to learn healthy habits now. As State Superintendent, I want our teenagers to have the opportunity to learn how to make healthy choices and consequently, increase their ability to benefit from sound academic instruction. It is critical that we help teenagers in North Carolina to develop habits that encourage lifelong patterns of physical fitness, sound nutrition, and appropriate weight-management practices.



Bob Etheridge,  
NC Department of Public Instruction

---

## EXECUTIVE SUMMARY

High school students in North Carolina present a mixed picture when it comes to healthy eating patterns, weight management practices, and fitness behaviors, well over half of male and female high school students are at risk for future health problems because they are not eating well, they are using unsafe weight reduction practices, and they are not engaging in regular physical fitness activities.

Female high school students in North Carolina, as is typical of many adolescent females nationally, tend to be preoccupied with weight reduction. Female students were twice as likely as males to consider themselves slightly to very overweight. Almost half of all female twelfth grade students thought that they were overweight. When teenagers worry about their weight, they often diet. Inadequate nutritional intake in adolescence is associated with a number of adverse health outcomes. Well over half of all female students were trying to lose weight compared to one in five male students.

A preoccupation with body-weight is considered a high risk factor for that portion of adolescents who then engage in risky weight control methods. The development of eating disorders and weight-loss practices that result in nutritional deprivation typically emerge in adolescence. Overall, one in fifty students reported that she or he used vomiting as a regular weight control method in the week prior to the administration of the survey - an indicator of a regular practice of this high risk behavior. Based on population estimates, approximately 6,000 high school students in North Carolina practice this harmful weight management behavior. An additional three in ten, or about 9,000 students, reported that they used diet pills or a combination of diet pills and vomiting to lose weight or keep from gaining weight in the week prior to the survey.

Reducing levels of dietary fat intake as well as increasing consumption of fruit, vegetables, and other high fiber foods have been recommended by health practitioners as ways to reduce the risk for development of cancer and cardiovascular diseases that are the leading causes of death among adults. Nearly one in three high school students reported that they had not eaten any fruit or consumer any fruit juice in the day prior to the administration of the survey. Also, nearly half of all high school students reported that they did not eat any type of vegetable on the previous day. Only about one in every seventeen students ate vegetables more than two times on the day prior to the survey.

High School students tend to eat a lot of fatty meats. More than half of all 9th-12th grade students reported that they ate hamburger, hot dogs, sausage, or barbecue on the day prior to the administration of the survey. Nearly seven in ten high school students reported that they had eaten high fat "junk food" on the day prior to the survey.

Reducing or limiting the consumption of high fat sweets is recommended as a part of a healthy diet. Yet, nearly four in ten students reported that they had eaten sweets one or more times on the day prior to the survey. Combined, more than one in five students reported eating sweets two or more times on the previous day.

---

Regular exercise has been shown to reduce the risk for a number of health problems as well as increase a sense of individual well-being. In all, about one in five high school students reported that they did not exercise at all during the week prior to the survey. About an equal proportion of students, one in ten, reported exercising on all seven days for at least twenty minutes in the week prior to the survey. In a related question, more than one in three students reported that they did not do any muscle-strengthening exercises. However, a nearly equal proportion of students reported engaging in muscle-strengthening exercises on one to three days of the previous week. Only about one in ten students reported some form of muscle-strengthening exercise on all seven days in the week prior to the survey.

It is generally accepted that regular participation in school physical education activities has numerous benefits including establishing a lifelong pattern of physical activity. However, over half of all high school students did not participate in any physical education classes. Of those participating in school PE classes, about one-third of the students attended classes on all five school days in the week prior to the survey.

School sports teams also encourage the development of physical fitness as well as other skills such as leadership. About two in five students, or approximately 126,000 students based on population estimates, played on one or more school sports teams. Additionally, more than one in three students reported playing on at least one team run by an organization outside of their schools.

The results of this study indicate that high school students in North Carolina present a mixed picture of healthy and risky physical, nutritional, and weight-management practices. Overall, the findings show that while a large proportion of high school students are practicing healthy behaviors, a nearly equal proportion of students have already established some high risk health behaviors.

---

## TABLE OF CONTENTS

Introduction .....	1
Overview of the North Carolina Youth Risk Behavior Survey .....	3
Indicators of Adolescent Weight, Dietary, and Physical Fitness Behaviors .....	4
Perception of Body Weight .....	5
Perception of Body Weight by Gender .....	5
Weight Control .....	6
Weight Control by Gender .....	7
Method of Weight Control — Exercise and Dieting .....	8
Method of Weight Control — Diet Pills and Vomiting .....	10
Dietary and Nutritional Habits .....	11
Consumption of Fruit or Fruit Juice .....	11
Vegetables .....	12
Fatty Meats .....	13
Other Fatty Foods .....	14
Sweets .....	15
Fitness Activities and PE/Sports .....	17
Aerobic Exercise .....	17
Exercising to Tone or Strengthen Muscles .....	18
Number of Days Participated in School PE Classes .....	19
Number of School Sports Teams .....	21
Number of Sports Teams Played on Outside of School .....	22
Summary of Findings .....	23
References .....	25
Appendix .....	26

---

## INTRODUCTION

Media reports indicate that our nation's youth are preoccupied with weight and body image. At the same time, they are not very physically fit (Kelder, Perry, Klepp, & Lytle, 1994)). The behavioral practices that promote or impede good health in later life are generally established by adolescence, and are often difficult to change in adulthood (Kelder, et al., 1994).

Lifetime patterns of eating are usually well-established by adolescence, but teenagers often eat poorly. Poor nutritional habits are associated with the development of obesity, behavioral problems, poor school performance, and impaired cognitive development. Obesity has increased among youth and is associated with major health problems in adulthood (Gortmaker, Dietz, Sobol & Wehler, 1987). Also, weight problems developed during adolescence appear to be more difficult to reverse and often persist into adulthood. Obese children are often subjected to ridicule and may suffer significant psychological distress (American Medical Association, 1990). At the present time, Americans consume more than 36 percent of their total calories from fat in their diets, although the recommendation is that no more than 30 percent of daily calories be derived from fat. High fat diets are associated with the development of cancer, heart disease, diabetes and obesity (Public Health Service, 1988).

On the other hand, a preoccupation with thinness may contribute to eating disorders such as bulimia or anorexia nervosa (Public Health Service, 1988). Eating disorders are most likely to occur among adolescent females; these disorders rarely develop in adults. While most treatment providers believe that eating disorders represent complex psychological issues, those who suffer from eating disorders have developed habits that predispose them to later health problems (American Medical Association, 1990).

National health objectives focus on increasing the proportion of youth engaged in regular physical activities as well as daily school physical education classes (US Public Health Service, 1990). Physical activity in childhood and adolescence is associated with a number of positive health and fitness outcomes such as increased cardiovascular and respiratory functioning, increased social skills, increased mental health functioning, and a longer and healthier life expectancy (Pafferbarger, Hyde, Wing, and Hseih, 1986). The extent to which schools offer — and students participate in — rigorous physical education activities impacts on the level of health-related fitness of youth that may be carried over into adulthood.

Primary prevention operates on the premise that modification of high risk behaviors can be achieved before behavioral patterns are fully established and resistant to change. Many studies have provided evidence substantiating this assumption. It is also widely held that prevention efforts are substantially more cost-effective than treatment or rehabilitation to reverse the damage caused by high risk health behaviors. The relationship between dietary intake, physical activity, and cardiovascular disease is well known (American Medical Association, 1990). For adults over the age of 25, sixty-six percent of all deaths and disability are attributed to just three factors: heart disease (35%), cancer (25%), and stroke (7%).



---

As a part of national health promotion efforts, the Centers for Disease Control (CDC) developed the Youth Risk Behavior Survey (YRBS) to determine the extent to which 9th-12th grade students across the nation engage in high risk behaviors that are associated with the leading causes of death, illness, and injury in high school youth.

Since 1990, the North Carolina Department of Public Instruction has participated in a cooperative agreement with the Centers for Disease Control to conduct the Youth Risk Behavior Survey. The Youth Risk Behavior Survey contains indicators of high risk behavior in six areas:

- Unintentional (accidental) and intentional (physical violence) injuries
- Alcohol and other drug use
- Sexual behavior that results in HIV infection, sexually transmitted diseases, and unintended pregnancies
- Tobacco use
- Physical fitness
- Nutritional and dietary habits

The information provided by the YRBS is intended to be used to help focus school programs and resources to address particular health problems, such as improving healthy weight management practices, good eating habits, and high fitness levels.

---

## Overview of the North Carolina Youth Risk Behavior Survey

The purpose of the Youth Risk Behavior Survey is to examine the behaviors of high school age youth that are associated with the six leading causes of death or disability. For this report, selected indicators of dietary or nutritional patterns, weight control, and physical fitness, taken from the 1993 North Carolina Youth Risk Behavior Survey (NC YRBS), are examined. The selected indicators provide a fairly comprehensive, though not exhaustive, view of the extent of risk for poor health outcomes among high school students as reported by the students themselves.

In 1990, the North Carolina Department of Public Instruction contracted with East Carolina University to conduct the first, limited YRBS survey. The partial 1990 survey excluded some YRBS questions and sampled only 9th and 12th grade students.

Beginning in 1993, North Carolina elected to participate fully in the YRBS. However, a modified version of the CDC's YRBS was developed so that some questions from the North Carolina Alcohol and Drug Defense (ADD) Student Survey could be included. The 1993 NC YRBS was administered to a representative sample of all 9th-12th grade public school students in 59 schools in the spring of 1993.

Schools were randomly selected as 1993 NC YRBS survey sites from a base of 407 public schools containing approximately 300,000 students in grades 9-12. Of the 71 schools chosen and 2,961 students included in the sample, 12 schools (16.9%) elected not to participate in the survey at all, four schools (5.6%) required active parental permission to participate in the survey, and six schools (8.5%) chose not to include the sexual behavior questions located at the end of the survey. Two reasons were cited most often for non-participation in the survey: (1) the questions about adolescent sexual behavior were unacceptable or deemed inappropriate at the local level, and (2) other similar surveys or educational activities were scheduled at the same time. The final sample included 59 schools (83% response rate) and 2,531 students completing the survey. To ensure accurate responses to sensitive questions as well as privacy and confidentiality, participation in the 1993 NC YRBS was entirely voluntary; students could decline to participate at any point in the survey administration.

Eighty-two percent (2,439) of the students sampled completed usable surveys. Of those, 49 percent (1,200) were male and 51 percent (1,235) were female. Four students did not identify their sex. Summarizing the characteristics of the student sample by grade, the results indicate that 30 percent (722) were in 9th grade, 29 percent (694) were in the 10th grade, 24 percent (582) were in grade 11, and 17 percent (425) were in the 12th grade. There were 16 students (.7%) who did not identify their grade level. By ethnic group, 65 percent (1,595) identified themselves as white, 28 percent (693) as black, 1.2 percent (30) as Hispanic, and 5 percent (117) as "other." The 1993 NC YRBS sample closely approximates the ethnic distribution of North Carolina students as a whole in 1993: white students in North Carolina comprised 66 percent, blacks represented 30 percent, and Hispanics were one percent of the total student population. Because there were too few Hispanic students (1%) to provide representative information about their dietary and fitness behaviors, the 1993 NC YRBS findings reported in this study are limited to white, black, and "other" students.

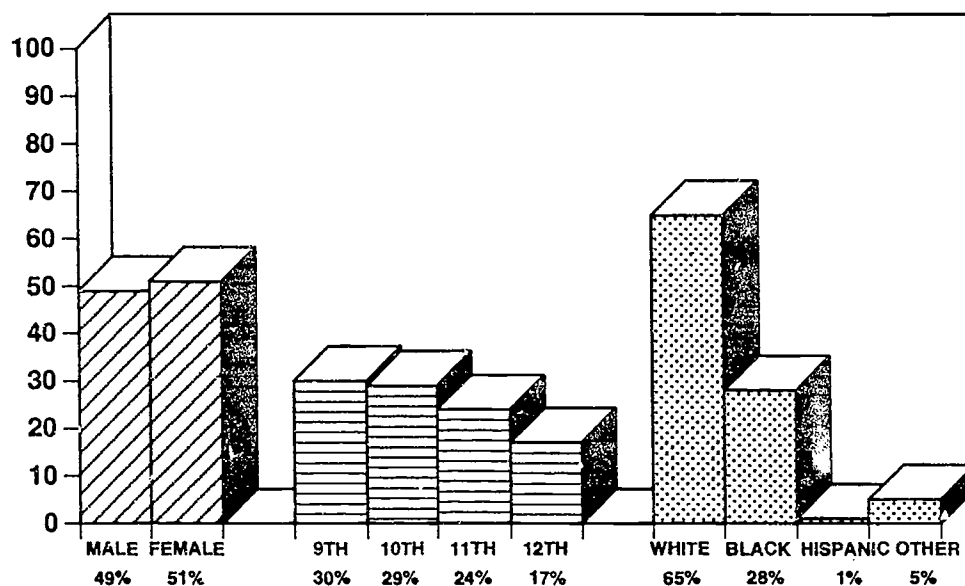


Figure 1. 1993 NC YRBS 9th-12th grade student sample by sex, grade, and race

## Indicators of Adolescent Weight, Dietary, and Physical Fitness Behaviors

### PERCEPTION OF BODY WEIGHT

Four questions on the 1993 NC YRBS address students' perception of their weight and methods that they use to control it. Nearly half of all high school students thought they were about the right weight (Figure 2). However, one third of students described themselves as slightly to very overweight. Conversely, nearly one in five students thought of himself or herself as slightly to very underweight. More than half of all black students considered themselves to be about the right weight. Fewer than half of white and "other" students considered themselves to be about the right weight. More than one-third of white and "other" students considered themselves slightly to very overweight compared to three in ten black students.

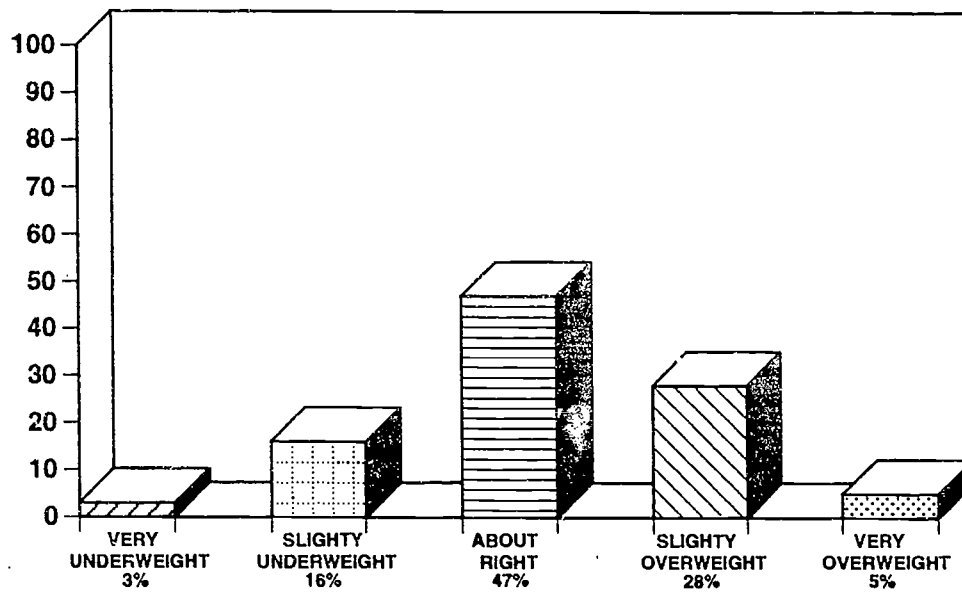


Figure 2. Percent of NC students reporting perception of body weight by category

- Overall, 47 percent of high school students thought they were about the right weight.
- Twenty-eight percent of 9th-12th grade students thought of themselves as slightly overweight and five percent thought of themselves as very overweight.
- In contrast, only three percent of all high school students thought of themselves as very underweight while 16 percent considered themselves slightly underweight.

### Perception of Body Weight by Gender

As noted earlier, females tend to be more preoccupied with weight than males. This preoccupation constitutes a risk factor for a portion of adolescents who may use risky practices to reduce or control their weight. In North Carolina, female students were less likely than male students to consider themselves underweight or about the right weight, while they were twice as likely as males to consider themselves slightly to very overweight (Figure 3). Consistent with national studies, female students tended to be more concerned with being overweight than male students and, by grade 12, almost half of female students compared to one-fifth of twelfth grade males thought that they were overweight. More than two in five white and black females, respectively, reported that they considered themselves to be slightly to very overweight compared to one in four white males and one in five of black males.

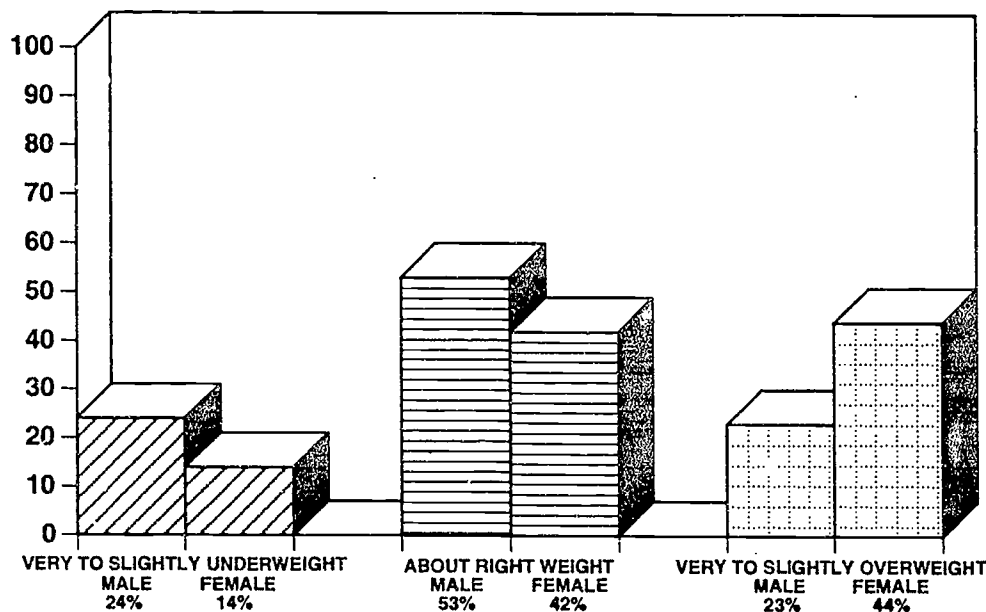


Figure 3. Percent of NC students reporting perception of weight by category for males and females

- Female high school students (44%) were nearly twice as likely as male students (23%) to view themselves as slightly to very overweight.
- Males (53%) were more likely than females (42%) to consider themselves about the right weight.
- Nearly twice as many male students (24%) considered themselves very to slightly underweight compared to female students (14%).

## WEIGHT CONTROL

In order to perform well in school, students need to have an adequate intake of healthy foods. When teenagers worry about their weight, they often diet. As a result, their nutritional intake may be inadequate to their growth and functional needs. Students were asked whether they were trying to lose, to gain, to stay the same, or were not trying to do anything about their weight. Two out of five high school students reported that they were trying to lose weight (Figure 4). A nearly equivalent percentage of students reported that they were trying to stay the same weight or not trying to do anything about their weight.

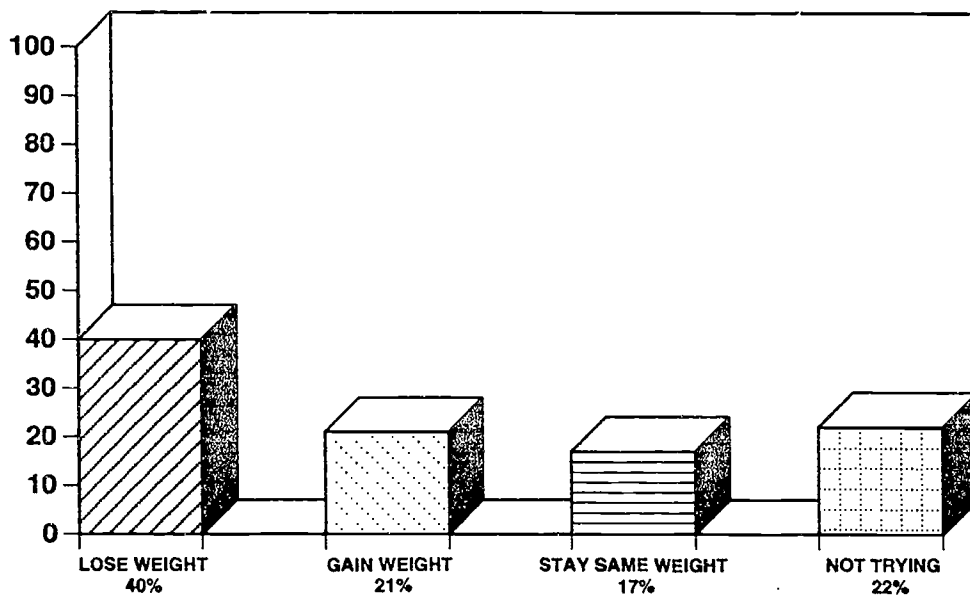


Figure 4. Percent of NC students trying to gain, lose, or stay the same weight

- Overall, 40 percent of all 9th-12th grade students reported that they were trying to lose weight.
- Seventeen percent of high school students reported that they were trying to stay the same weight, while 22 percent were not trying to do anything about their weight.
- Twenty-one percent of high schools students were trying to gain weight.

### Weight Control by Gender

As already noted, female students tend to be more preoccupied with body-weight perceptions than male students. As such, they represent a high risk group for the development of unhealthy eating patterns and weight-loss practices, such as bulimia and anorexia nervosa. Inadequate nutritional intake during adolescence is associated with a number of health problems. Although the questions contained in the survey only assess students' perception of their weight and self-reported weight management practices, findings indicate that most female students in North Carolina were preoccupied with weight loss. Well over half of all high school females were trying to lose weight compared to one in five male students (Figure 5). On the other hand, nearly one-third of male high school students reported trying to gain weight compared to one in ten female students.

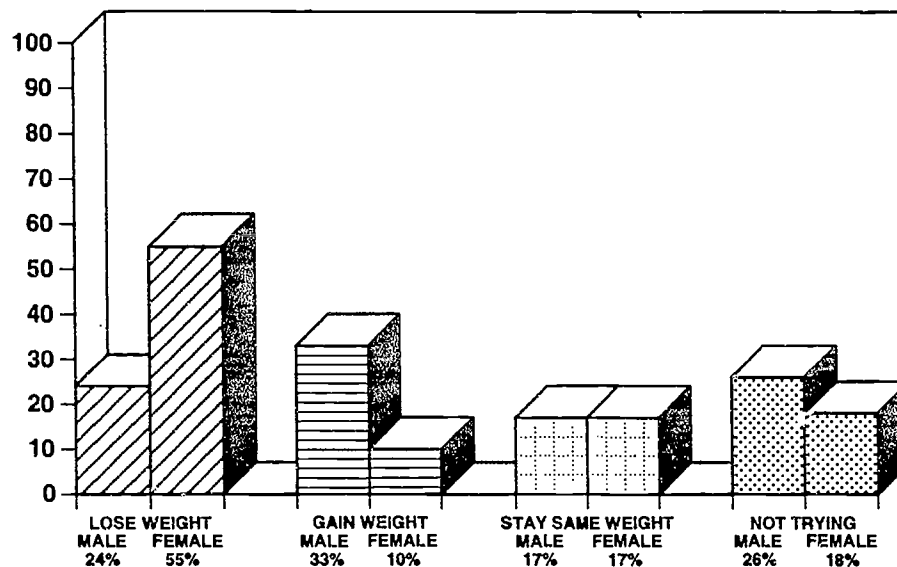


Figure 5. Percent of NC students trying to lose, gain, or stay the same weight by gender

- Female students (55%) were more than twice as likely to report trying to lose weight as male students (24%).
- Males (33%) were much more likely than females (10%) to report trying to gain weight.
- Males and females were equally likely to report trying to stay the same weight (17% each).
- Males (26%) were more likely than females (18%) to report that they were not trying to do anything about their weight.

Although not shown in Figure 5, white females (60%) were significantly more likely than black females (45%) to report trying to lose weight. In general, male students were significantly less likely to report trying to lose weight than female students. White males (24%) and black males (25%) were nearly equally likely to be trying to lose weight.

### Method of Weight Control — Exercise and Dieting

Studies have shown that normal-weight adolescent females tend to consider themselves to be overweight and use inappropriate weight-reducing methods (Feldman, Feldman, & Goodman, 1988). As a part of overall health goals for youth, teenagers have been encouraged to maintain an appropriate weight or lose weight through fitness activities rather than dieting. Over half of all high school students in North Carolina reported that they did not use any method to keep from gaining weight or to lose weight in the week prior to the survey administration (Figure 6). However, more than one in five high school students reported that they had exercised in the past week and more than one in seven students said that they had dieted and exercised in order to maintain their weight or to lose weight.

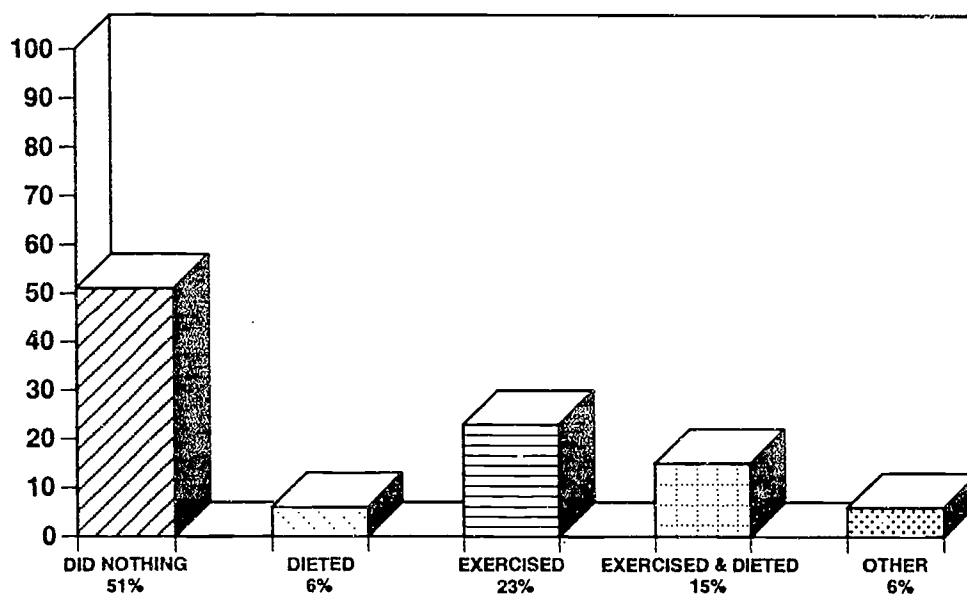


Figure 6. Percent of NC students reporting ways used to keep from gaining weight or to lose weight in previous seven days

- Fifty-one percent of all high school students reported that they did not do anything to keep from gaining weight or to lose weight in the week prior to the administration of the survey.
- Six percent of high school students dieted in the week prior to the survey to maintain or lose weight.
- Twenty-three percent of all 9th-12th grade students reported that they exercised to keep from gaining weight or to lose weight in the previous seven days.
- Fifteen percent of all students used both exercise and diet as their method to control or lose weight.
- Males (64%) were more than twice as likely as females (39%) to report that they did not do anything to control their weight.
- Females (24%) were four times more likely than males (6%) to report exercising and dieting as the one method they used to control their weight.



## Method of Weight Control — Diet Pills and Vomiting

Harmful weight-loss practices and negative attitudes about body size have been reported among girls as young as nine years of age (Mellin, 1988). Anorexia nervosa and bulimia, potentially life-threatening eating disorders, tend to be limited to young women and manifested during adolescence (Shisslak, Crago, & Neal, 1990). These eating disorders involve self-deprivation and/or bouts of consuming large quantities of food, followed by self-induced vomiting. It is thought that widely accepted norms of female beauty that equate thinness with attractiveness and social approval have influenced the increasing rates of anorexia and bulimia (Centers for Disease Control, 1992). Although eating disorders are commonly thought of as being female health problems, males occasionally have been diagnosed with eating disorders as well.

Most high school students in North Carolina did not use any method to control their weight in the week prior to the administration of the survey (Figure 7). However, one in fifty high school students reportedly used vomiting as a weight control method in the week prior to the survey. Based on population estimates, approximately 6,000 students practiced this harmful weight management behavior. An additional three in ten, or about 9,000 students based on estimates, reported that they used diet pills or used a combination of diet pills and vomiting to lose weight or keep from gaining weight in the week prior to the survey.

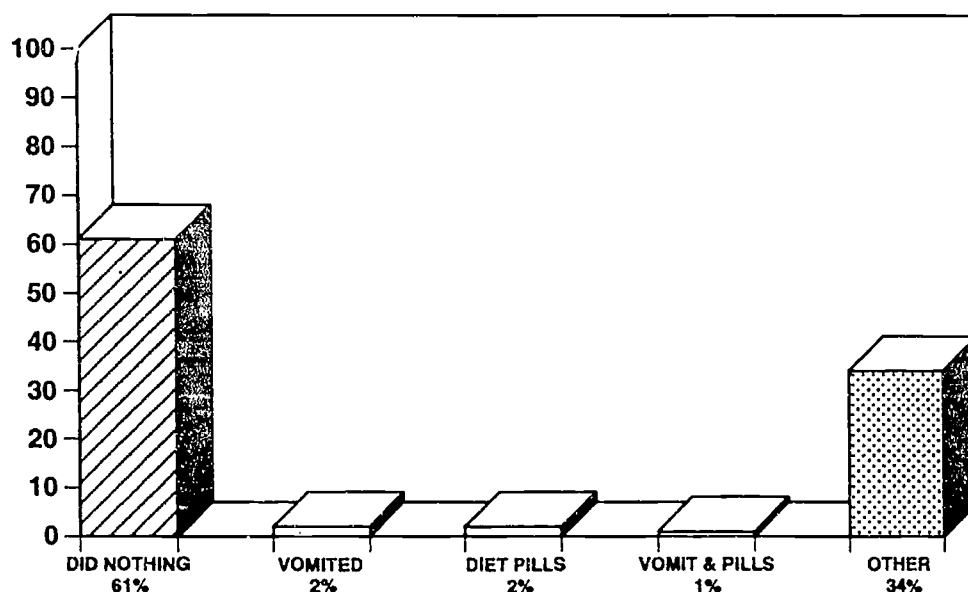


Figure 7. Percent of NC students reporting the method used to control weight in previous seven days

- Sixty-one percent of all high school students reported that they did not use any method listed to control their weight in the week prior to administration of the survey.
- Two percent of all 9th-12th grade students reported that they made themselves vomit as the one method used to control their weight in the week prior to the administration of the survey.

- 
- Two percent of high school students reported the use of diet pills to control their weight.
  - One percent of high school students used a combination of diet pills and vomiting to control their weight.
  - Thirty-four percent of all 9th-12th grade students reported that they used some other method to lose weight or keep from gaining weight.

When examined by gender (not shown in Figure 7), 76 percent of male high school students compared to 46 percent of female high school students reported that they did not do anything to control their weight. A total of three percent of high school males reported that they used vomiting, diet pills, or a combination of vomiting and diet pills compared to seven percent of high school females. In all, 47 percent of females reported that they used some method other than vomiting or dieting to control their weight.

## **DIETARY AND NUTRITIONAL HABITS**

Reducing levels of dietary fat intake as well as increasing consumption of fruits, vegetables, and other high fiber foods have been recommended by the National Cancer Institute and others as one way to reduce the rates of cancer and cardiovascular diseases that are the leading causes of death among adults (Rodgers, Kessler, Portnoy, Potosky, Patterson, Tenney, Thompson, Krebs-Smith, Breen, Matthews, & Kahle, 1994). Several questions on the 1993 NC YRBS assess fruit and vegetable intake as well as the consumption of fatty foods.

### **Consumption of Fruit or Fruit Juice**

Nearly one in three high school students reported that they had not consumed any fruit or fruit juice in the day prior to the survey (Figure 8). However, taken together, half of all students reported eating fruit or drinking juice one or two times on the day prior to the survey.

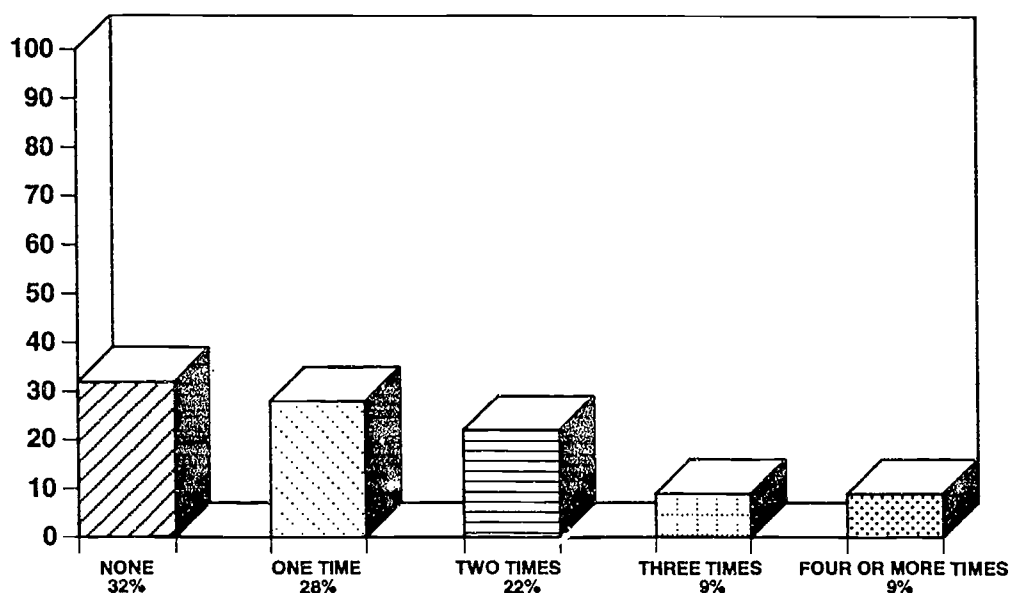


Figure 8. Percent of NC students reporting the number of times they ate fruit or drank fruit juice on the day prior to the survey

- Overall, 32 percent of all high school students did not consume any fruit juice or eat fruit in the day prior to the survey.
- Twenty-eight percent of 9th-12th grade students ate fruit or drank fruit juice at least once on the day prior to the survey.
- Twenty-two percent of students reported that they ate fruit or drank fruit juice two times the day before and nine percent ate fruit or drank juice three times on the previous day.
- Nine percent of high school students consumed fruit or fruit juice four or more times on the day prior to the administration of the survey.

Males were somewhat more likely than females to report eating fruit. Seventy-one percent of males and 65 percent of females reported that they ate fruit or drank fruit juice one or more times on the previous day.

### Vegetables

Students were asked how many times they ate a green salad, raw vegetables, or cooked vegetables on the day prior to the survey. Overall, nearly half of all high school students reported that they did not eat any type of vegetable on the previous day (Figure 9). Nearly half of the students reported that they ate vegetables one or two times. However, only about one in every seventeen students ate vegetables more than two times on the day prior to the survey.

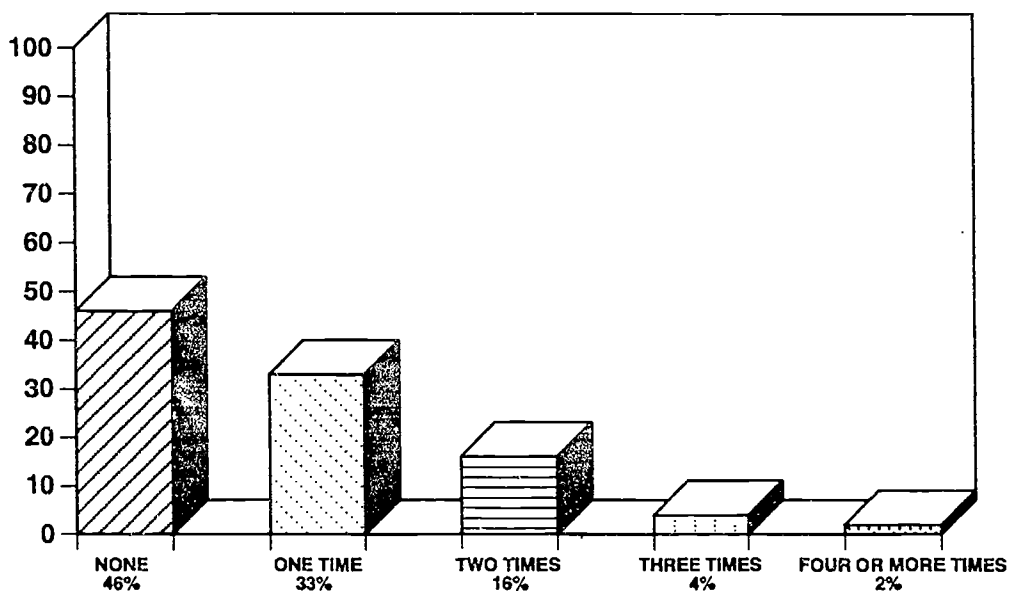


Figure 9. Percent of NC students who ate a green salad, raw, or cooked vegetables on the day prior to the survey

- Forty-six percent of all high school students reported not eating vegetables on the day prior to the survey.
- Thirty-three percent of 9th-12th grade students ate vegetables at least once.
- Sixteen percent of high school students ate vegetables two times on the day prior to the survey.
- Only four percent of high school students ate vegetables three times and two percent ate vegetables four or more times on the day prior to the survey.

### Fatty Meats

Over the past two decades, the consumption of high fat meats has been discouraged. Unfortunately, the percentage of young people in North Carolina who consume high fat meats is still fairly high. More than half of all high school students reported that they ate hamburger, hot dogs, sausage, or barbecue on the day prior to the administration of the survey (Figure 10). Males were nearly one and one half times more likely than females to report eating high fat-content meats on the previous day.

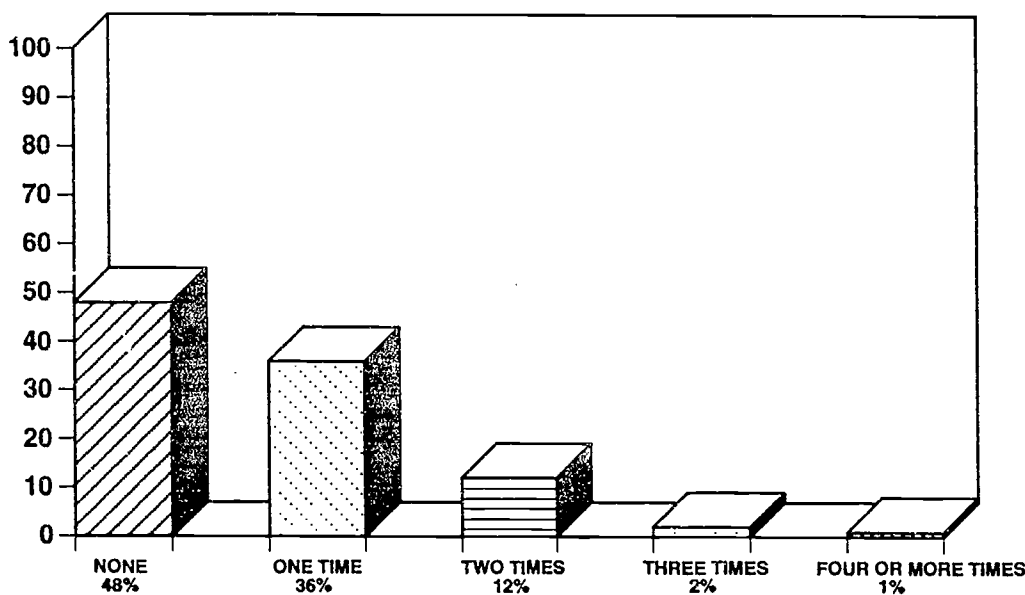


Figure 10. Percentage of NC students who ate hamburger, hot dogs, sausage, or barbecue on the day prior to the survey

- Forty-eight percent of all high school students reported that they did not consume high-fat content meats on the day prior to the survey.
- Thirty-six percent of high school students ate fatty meat one time on the day prior to the survey. Twelve percent ate high fat meats two times on the day prior to the survey.
- Combined, three percent of all high school students ate fatty meat three or more times on the day prior to the survey.

### Other Fatty Foods

Adolescents often eat “junk” food that is high in fat content. Students were asked to report how often they had eaten french fries or potato chips on the day prior to the survey. Nearly seven out of ten high school students reported that they had eaten french fries or potato chips on the day prior to the survey (Figure 11). White, black, and “other” students were nearly equally likely to report having eaten french fries or potato chips on the previous day with more than three in five, respectively, reporting doing so. Seven in ten males compared to six in ten females reported eating french fries or potato chips on the day prior to the survey.

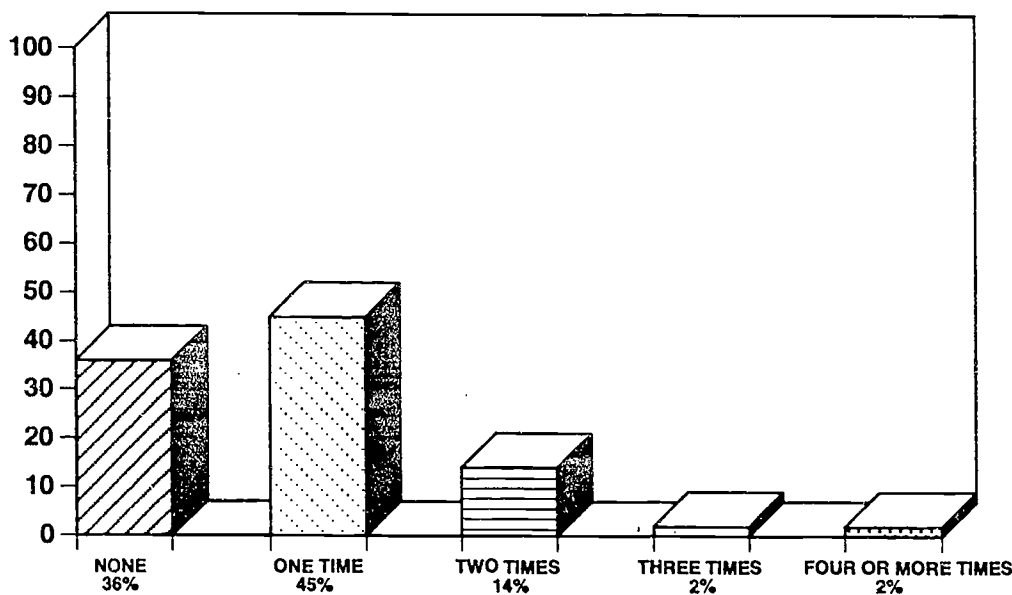


Figure 11. Percent of NC students who ate french fries or potato chips on the day prior to the survey

- In all, 64 percent of all high school students reported that they ate french fries or potato chips on the day prior to the survey, while only 36 percent did not do so.
- Most high school students (45%) who ate french fries or potato chips reported doing so only one time on the previous day.

### Sweets

Reducing or limiting the amount of high fat sweets consumed is recommended as a part of a healthy diet. Students were asked to report the number of times that they ate sweets such as cookies, doughnuts, pie, or cake on the day prior to the survey as an indicator of consumption of sweets. Overall, two in five high school students reported that they had not consumed any of the kinds of sweets listed in the question on the day prior to the administration of the survey. Nearly four in ten students reported that they had consumed sweets one time on the prior day. Combined, more than one in five students consumed sweets two or more times on the previous day. Nearly seven in ten males reported consuming sweets compared to somewhat more than half of all female students. Black students were somewhat less likely than “other” or white students to consume sweets.

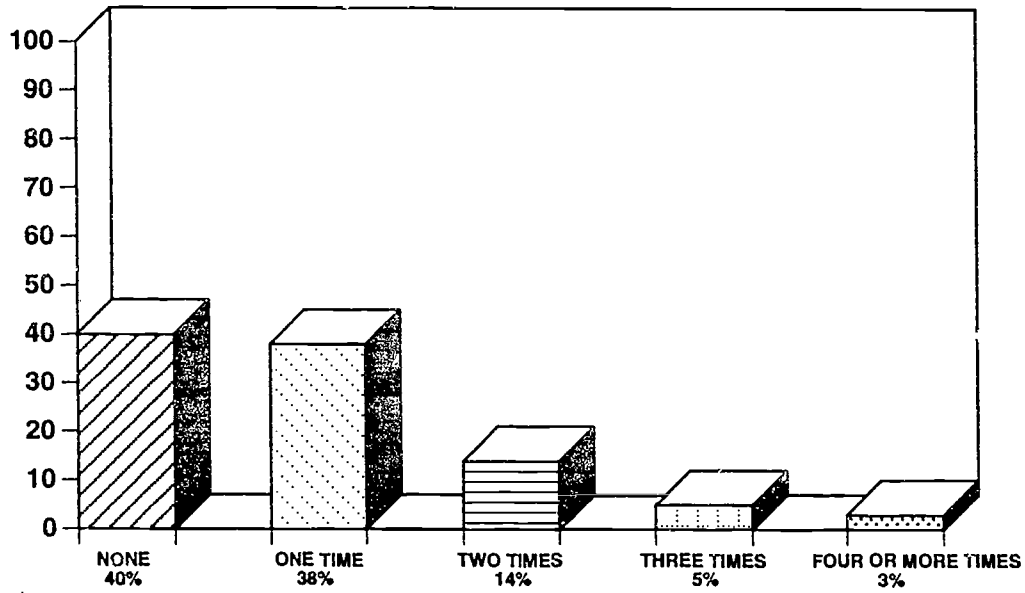


Figure 12. Percent of NC students reporting consumption of cookies, doughnuts, pie, or cake on the day prior to the survey

- Overall, 60 percent of all high school students reported eating sweets one or more times on the day prior to the Survey while 40 percent do not do so.
- Overall, 38 percent of high school students reported eating the listed sweets one time on the day prior to the survey.
- Fourteen percent of 9th-12th grade students reported consuming cookies, doughnuts, pie, or cake two times on the previous day.
- Five percent of students consumed sweets three times on the previous day and three percent of students ate sweets four or more times on the previous day.

## FITNESS ACTIVITIES AND PE/SPORTS

Regular exercise reduces the risk for a number of health problems and is associated with an increased sense of well-being. Physical education classes in school provide a time for regular fitness activities that may help establish fitness levels that extend into adulthood.

### Aerobic Exercise

Students were asked on how many days in the week prior to the survey that they had exercised aerobically for at least twenty minutes. About one in five high school students reported that they did not exercise at all during the previous week. About an equal proportion of students (one out of five) reported that they had exercised for at least twenty minutes on all seven days. Males were much more likely than females to report that they exercised aerobically in the past week with nearly nine in ten males compared to seven in ten females reporting that they exercised aerobically on one or more days of the previous week. Nearly seven in ten whites compared to six in ten black and "other" students reported exercising at least once for 20 minutes in the week prior to the survey.

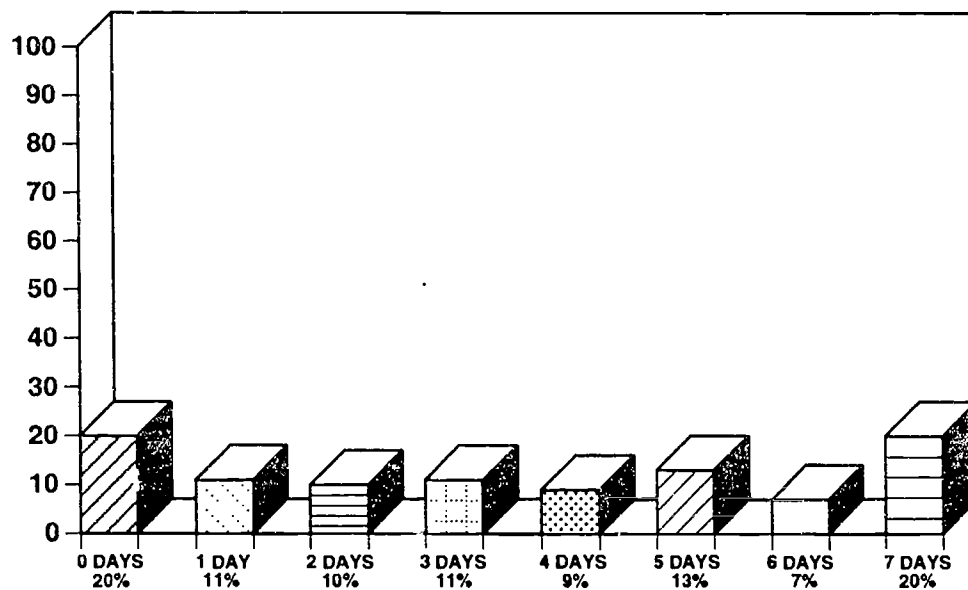


Figure 13. Percent of NC students who exercised for at least 20 minutes in previous seven days



- 
- Twenty percent of all high school students did not exercise aerobically in the seven days prior to the survey.
  - Combined, about 32 percent of students exercised aerobically one to three days in the previous week.
  - Approximately 29 percent of high school students reported that they exercised aerobically for four to six days in the week prior to the survey administration.
  - Twenty percent of all 9th-12th grade students reported that they had exercised aerobically on all seven days of the week prior to the survey.

### **Exercising to Tone or Strengthen Muscles**

In addition to the benefits gained from aerobic exercise, there are health benefits to be gained from muscle strengthening or toning. Students were asked on how many of the previous seven days they did exercises to strengthen or tone their muscles, such as sit ups, push ups, or weight lifting. In all, more than one out of three students did not do any muscle-strengthening exercises. Combined, about one in three students reported that they did muscle-toning or strengthening exercises on one to three days of the previous week. Few students (one in ten) reported such exercises on all seven days. Males were almost twice as likely as females to report exercising on one or more days in the previous week to tone or strengthen the body. White and black males were nearly equally likely to have exercised one or more days in the previous week to strengthen or tone their muscles with nearly eight in ten, respectively, reporting having done so.

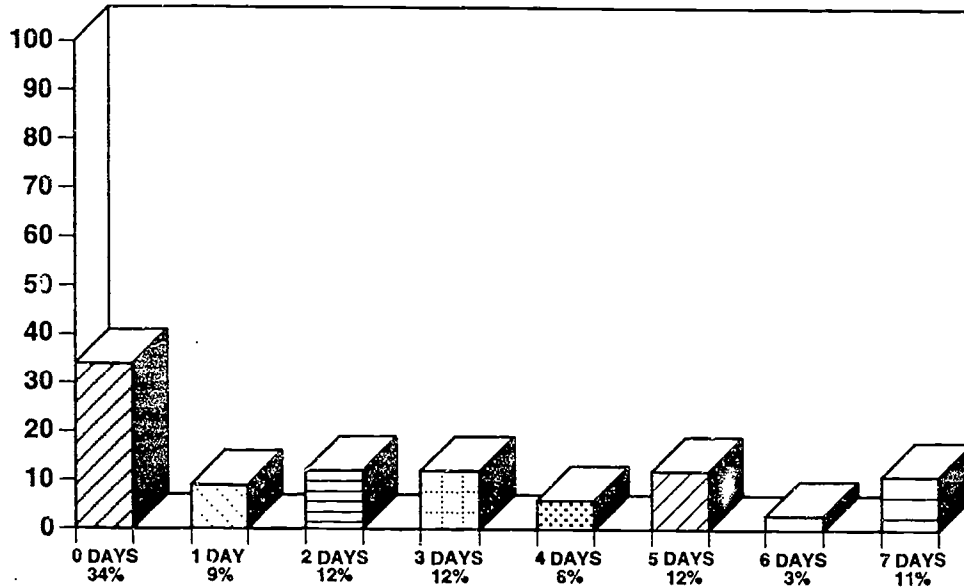


Figure 14. Percent of NC students reporting muscle strengthening or toning exercises in seven days prior to the survey

- Thirty-four percent of all high school students did not do any strengthening exercises on any of the previous seven days, while about sixty-six percent did muscle-strengthening exercises on at least one day in the week prior to the survey.
- Nine percent of all students reported muscle-strengthening exercises on one of the previous seven days. Twelve percent of high school students reported exercising to build strength or tone the body on two of the previous seven day.
- Twelve percent of students exercised three of the previous seven days.

### Number of Days Participated in School PE Classes

As previously noted, participating regularly in a school physical education class is believed to benefit students in gaining a level of fitness and a lifelong pattern of physical activity. In North Carolina, over half of all high school students did not participate in any physical education classes (Figure 15). On the other hand, about one-third of all high school students attended a PE class on all five school days in the week prior to the survey. Less than half of all white students reported participating in school physical education classes whereas more than half of black and "other" students reported doing so. More than half of all male students reported participating in one or more days of school PE

classes compared to two in five female students. Less than one in three female students reported participating in school PE classes on all five school days compared to four in ten male high school students. Black and "other" students were somewhat more likely than white students to report participating in school PE classes on one or more days.

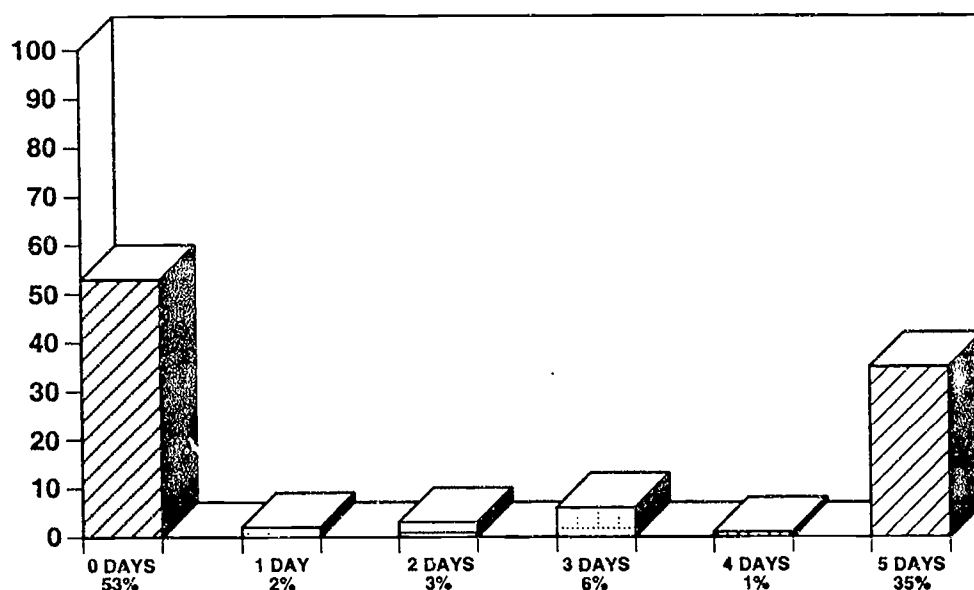


Figure 15. Percent of NC students reporting participation in school PE classes by number of days attended in an average school week

- Fifty-three percent of all high school students did not participate in any physical education classes in school.
- Combined, twelve percent of high school students participated in PE on one to four school days.
- Thirty-five percent of all 9th-12th grade students participated in school PE classes on all five school days.

## Number of School Sports Teams

Another method for promoting lifelong physical fitness, among other benefits, is participation in school sports activities. Students were asked to report the number of school sports teams on which they played. About two in five students, or approximately 126,000 students based on population estimates, played on one or more sports teams organized by the school (Figure 16): However, nearly six in ten students did not play on any organized school sports teams. Males were one and one half times more likely than females to report playing on one or more school sports teams. White and black males were nearly equally likely to report playing sports in the 12 month period prior to the administration of the survey.

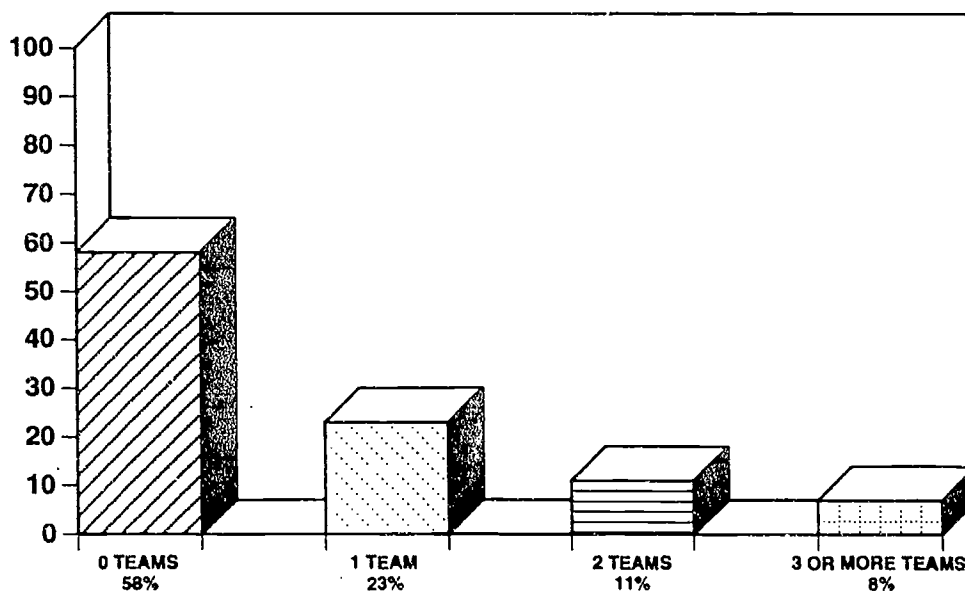


Figure 16. Percent of NC students reporting playing on school sports teams in past 12 months

- Forty-two percent of all high school students played on one or more sports teams organized by their schools in the 12 month period prior to the administration of the survey.
- Twenty-three percent of students played on one school team in the past year.
- Eleven percent of 9th-12th grade students played on two teams organized by the school.
- Eight percent of all high school students played on three or more school sports teams.

## Number of Sports Teams Played on Outside of School

Students were also asked about their participation in sports activities outside of school during the year prior to the survey. Overall, more than one in three students reported playing on at least one sports team run by organizations outside of their schools. Extrapolating based on population estimates, approximately 102,000 high school students participated in team activities outside of school sports. Males were almost twice as likely as females to report playing on a team outside of school sports teams in the year prior to the survey.

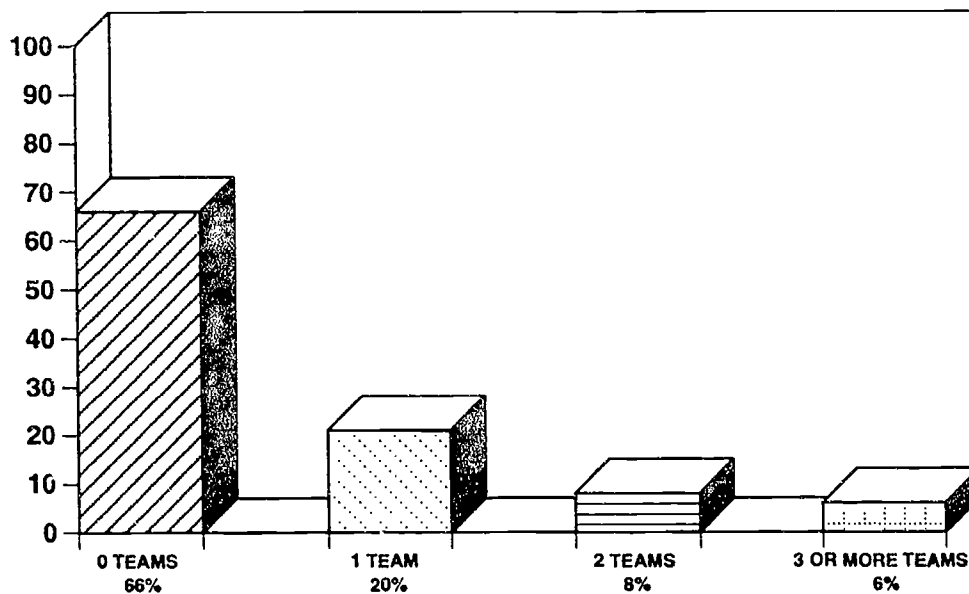


Figure 17. Percent of NC students playing on sports teams outside of school in past 12 months

- Combined, 34 percent of high school students participated in one or more sports teams run by organizations outside of their schools in the year prior to the survey.
- Twenty percent of students reported playing on one team outside of school in the past year.
- In all, about 14 percent of high school students reportedly played on two or more teams outside of school in the year prior to the survey.

---

## SUMMARY OF FINDINGS

The findings presented in this report indicate that there is some good news and some bad news about the weight management practices, dietary intake, and fitness levels of our students. The good news is that a large proportion of North Carolina's high school students are practicing healthy weight, eating, and fitness behaviors. The bad news is that well over half of the both male and female high school students are at risk for future health problems because they are not eating well, they are using unsafe weight reduction practices, and they are not very physically fit.

North Carolina's adolescent females tend to be preoccupied with their weight. Females students were twice as likely as males to consider themselves slightly to very overweight and, almost half of female twelfth grade students thought that they were overweight. In order to perform well in school, students need to have an adequate intake of healthy foods. When teenagers worry about their weight, they often diet. Well over half of all high school females were trying to lose weight compared to one in five male students. On the positive side, nearly half of all high school students thought they were about the right weight. Similarly, over half of all high school students in North Carolina reported that they did not use any method to keep from gaining weight or to lose weight in the week prior to the survey administration.

The preoccupation with body-weight constitutes a risk factor for that portion of adolescents who use risky practices to control their weight. As such, they represent a high risk group for the development of eating disorders and weight-loss practices that result in nutritional deprivation. Overall, one in fifty students reported that she or he used vomiting as a weight control method in the week prior to the survey – an indicator of regular practice of a risky eating disorder. Based on population estimates, approximately 6,000 students practice this harmful weight management behavior. An additional three in ten, or about 9,000 students, reported that they used diet pills or used a combination of diet pills and vomiting to lose weight or keep from gaining weight in the week prior to the survey.

Reducing levels of dietary fat intake as well as increasing consumption of fruits, vegetables, and other high fiber foods have been recommended by health practitioners as ways to reduce the risk for cancer and cardiovascular diseases that are the leading causes of death among adults. Nearly one in three high school students reported that they had not consumed any fruit or fruit juice in the day prior to the survey. Also, nearly half of all high school students reported that they did not eat any type of vegetable on the previous day. Only about one in every seventeen students ate vegetables more than two times on the day prior to the survey.

High school students in North Carolina consume fatty meats at a fairly high rate. More than half of all high school students reported that they ate hamburger, hot dogs, sausage, or barbecue on the day prior to the administration of the survey. Nearly seven out of ten high school students reported that they had eaten high fat "junk food" such as french fries or potato chips, on the day prior to the survey.

---

Reducing or limiting the consumption of high fat sweets is recommended as a part of a healthy diet. Yet, nearly four in ten students reported that they had consumed sweets one time on the prior day. Combined, more than one in five students consumed sweets two or more times on the previous day.

Regular exercise reduces the risk for a number of health problems and increases a sense of well-being. Students were asked about their aerobic exercise patterns. In all, about one in five high school students reported no exercise at all during the previous week. About an equal proportion of students (one in five) reported exercising for at least twenty minutes on all seven days. In a related question, more than one out of three students reported no muscle-strengthening exercises. Combined, a nearly equal number, or about one in three students, reported engaging in a muscle-toning or strengthening exercise on one to three days of the previous week. Only about one in ten students reported exercising on all seven days.

Among health educators, it is widely accepted that regular participation in school physical education classes has numerous benefits including the establishment of a lifelong pattern of physical activity. However, over half of all high school students did not participate in any physical education classes. Of those participating in school PE classes, about one-third of the students attended class on all five school days in the week prior to the survey.

Another method for encouraging physical fitness, along with other health and psychological benefits, is school sports activities. About two in five students, or approximately 126,000 students, based on population estimates, played on one or more sports teams organized by the school. Additionally, more than one in three students reported playing on at least one team run by organizations outside of their schools. Extrapolating from population estimates, this indicates that approximately 102,000 high school students participated in team activities outside of school sports.

The results of this study indicate that North Carolina students present a mixed picture of healthy and risky physical, nutritional, and weight-management practices. And, the State's youth are not eating as well as they could. Overall, the findings show that while a large proportion of high school students are engaging in healthy behaviors, another large portion of North Carolina students have already established some high risk health behaviors.

---

## REFERENCES

- American Medical Association. (1990). Healthy Youth 2000: National Health Promotion and Disease Prevention Objectives. American Medical Association, Department of Medicine, Chicago, IL.
- Feldman, W., Feldman, E., & Goodman, J.T. (1988). "Culture versus biology: Children's attitudes toward thinness and fatness." Pediatrics. 81:190-194.
- Johnston, L.D., O'Malley, P.M., & Bachman, J.G. (1991). "Drug use among high school American high school seniors, college students, and young adults, 1975-1990." Vol. 1: High School Seniors. National Institute on Drug Abuse. Rockville, MD.
- Kelder, S.L., Perry, C.L., Klepp, K.I., & Lytle, L.L. (1994). "Longitudinal tracking of adolescent smoking, physical activity, and food choice behaviors." American Journal of Public Health. 84(7): 1121-1126.
- Mellin, L.M. (1988) "Responding to disordered eating in children and adolescents." Nutrition News. 51:5-7.
- Paffenbarger, R.S., Hyde, R.T., Wing, A.L., & Hsieh, C.C. 1986. "Physical activity, all cause mortality, and longevity of college alumni." New England Journal of Medicine. 314: 605-613.
- US Public Health Service. (1990). Healthy People 2000: National Health Promotion and Disease Prevention Objectives. Washington, DC: US Government Printing Office.
- Shisslak, C.M., Crago, M., & Neal, M.E. (1990). "Prevention of eating disorders among adolescents." American Journal of Health Promotion. 21:44-48.
- Simons-Morton, B.G., Taylor, W. C., Snider, S.A., & Huang, I.W. 1994. "The Physical Activity of Fifth-Grade Students during Physical Education Classes." American Journal of Public Health. 83(2): 262-264.



---

## APPENDIX

### Selected Questions pertaining to weight management, nutrition, and physical fitness, taken from the 1993 North Carolina Youth Risk Behavior Survey

77. How do you think of yourself?
- a. Very underweight
  - b. Slightly underweight
  - c. About the right weight
  - d. Slightly overweight
  - e. Very overweight
78. Which of the following are you trying to do?
- a. Lose weight
  - b. Gain weight
  - c. Stay the same weight
  - d. I am not trying to do anything about my weight
79. During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight?
- a. I did not try to lose weight or keep from gaining weight
  - b. I dieted
  - c. I exercised
  - d. I exercised and dieted
  - e. I use some other method, but I did not exercise or diet
80. During the past 7 days, which one of the following did you do to lose weight or to keep from gaining weight?
- a. I did not try to lose weight or keep from gaining weight
  - b. I made myself vomit
  - c. I took diet pills
  - d. I made myself vomit and took diet pills
  - e. I used some other method, but I did not vomit or take diet pills

- 
81. Yesterday, did you eat fruit or drink fruit juice?
- a. No
  - b. Yes, once only
  - c. Yes, two times
  - d. Yes, three times
  - e. Yes, four or more times
82. Yesterday, did you eat green salad or raw or cooked vegetables?
- a. No
  - b. Yes, once only
  - c. Yes, two times
  - d. Yes, three times
  - e. Yes, four or more times
83. Yesterday, did you eat hamburger, hot dogs, sausage, or barbecue?
- a. No
  - b. Yes, once only
  - c. Yes, two times
  - d. Yes, three times
  - e. Yes, four or more times
84. Yesterday, did you eat french fries or potato chips?
- a. No
  - b. Yes, once only
  - c. Yes, two times
  - d. Yes, three times
  - e. Yes, four or more times
85. Yesterday, did you eat cookies, doughnuts, pie, or cake?
- a. No
  - b. Yes, once only
  - c. Yes, two times
  - d. Yes, three times
  - e. Yes, four or more times

- 
86. On how many of the past 7 days did you exercise or participate in sports activities for at least 20 minutes that made you sweat and breathe hard, such as basketball, jogging, fast dancing, swimming laps, tennis, fast bicycling, or similar aerobic activities?
- a. 0 (zero) days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
  - g. 6 days
  - h. 7 days
87. On how many of the past 7 days did you do exercises to strengthen or tone your muscles such as push-ups, sit-ups, or weight lifting?
- a. 0 (zero) days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
  - g. 6 days
  - h. 7 days
88. In an average week when you are in school, on how many days do you go to physical education (PE) classes?
- a. 0 (zero) days
  - b. 1 day
  - c. 2 days
  - d. 3 days
  - e. 4 days
  - f. 5 days
89. During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports?
- a. I do not take PE
  - b. Less than 10 minutes
  - c. 10 to 20 minutes
  - d. 21 to 30 minutes
  - e. More than 30 minutes

---

90. During the past 12 months, on how many sports teams run by your school, did you play?  
(Do not include PE classes.)

- a. 0 (zero) teams
- b. 1 team
- c. 2 teams
- d. 3 or more teams

91. During the past 12 months, on how many sports teams run by organizations outside of your school, did you play?

- a. 0 (zero) teams
- b. 1 team
- c. 2 teams
- d. 3 or more teams

---

## NOTES

37