

# REPORT

FINAL REPORT

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## **The Impact of Healthy Harlem on the Prevalence of Child Overweight and Obesity and Contributing Factors: Interim Evaluation Report**

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## I. INTRODUCTION

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The Harlem Children’s Zone (HCZ)<sup>®</sup> is a nonprofit organization that provides a comprehensive set of free programs to address the social, health, and educational development of children in Central Harlem—a New York City neighborhood with a child poverty rate that is more than double the national average (HCZ 2009). The goal of HCZ is to break the cycle of poverty and ensure that children in Harlem grow up to lead productive and successful lives. HCZ aims to provide youth in the Zone with services and supports similar to those available to youth in more affluent communities, including effective early childhood programs, schools, and after-school programs; safe streets; and the infrastructure to address community needs.

HCZ recognizes that childhood obesity is a critical public health problem and that obesity can derail children’s ability to reach their full potential. HCZ has promoted healthy, active lifestyles since 2001 by offering increased opportunities for physical activity in school and after-school settings, sports instruction and seasonal sports teams, nutrition education, and access to fresh produce. Although these efforts met with some success, the urgency of the issue was heightened in school year 2010–2011 when HCZ found that nearly half (45 percent) of students 12 and older who participated in HCZ programs were overweight or obese.

In 2011, HCZ received funding from The JPB Foundation to design and implement a comprehensive program for promoting healthy lifestyles. HCZ contracted with the Bridgespan Group, also funded by The JPB Foundation, to create (1) a blueprint for the program and (2) a basic plan for implementing the program. Using this guidance, HCZ continued developing plans for the program. The result is Healthy Harlem, a multifaceted program implemented in HCZ’s after-school sites, where students receive additional instruction, physical activity, a snack, and an opportunity to socialize for several hours after school each day.

Healthy Harlem, which aims to provide a more intensive intervention for students who are most at risk, has three main components:

1. **Prevention.** All students attending HCZ after-school programs are exposed to the Prevention component, which includes 60 minutes of moderate-to-vigorous physical activity (MVPA) each day the student attends the program, healthy snacks, nutrition education lessons, and parent workshops. The number and content of nutrition education lessons and parent workshops varies across after-school sites, based on the age and characteristics of the student population. Families are also invited to participate in Family Fit, a component of the Get Fit program described below. In addition, families are connected with additional programs and resources, including the following:
  - The Healthy Harlem Harvest, a free farmers market for the community
  - Health Bucks, vouchers that can be used to purchase healthy food
  - Adult nutrition and fitness classes, including Weight Watchers
  - Referrals to Single Stop, an HCZ program that provides free legal services, financial services, and connections to government resources

- Referrals to local health care providers and other community programs
2. **Get Fit.** In addition to the Prevention component, middle and high school students who are overweight or obese (those with body mass index [BMI]-for-age at or above the 85th percentile) also participate in Get Fit. Get Fit is an intensive, 12-week program in which students identify and work on specific goals for improving their eating and/or physical activity habits. Students participate in gender-specific discussion sessions, one-on-one meetings with Healthy Harlem staff to set goals and monitor progress, group activities with peers related to health and wellness, and daily physical activity. Students who participate in Get Fit are expected to get five hours of MVPA per week, either in Healthy Harlem after-school sites or on their own.

Families of students participating in Get Fit are also asked to participate in Family Fit, which is modeled after the Weight Watchers Family Power Program. This eight-week program includes eight two-hour nutrition workshops and cooking demonstrations for caregivers, family fitness activities, group counseling, and trips to farmers' markets and grocery stores. It also incorporates a Family Fit cooking club where children prepare healthy meals to enjoy together and with their families.

3. **Medical Support.** In addition to the Prevention and Get Fit components, Healthy Harlem staff provide additional support for students who are extremely obese (those with BMI-for-age at or above the 99th percentile) by working with caregivers to empower them to advocate effectively for their children's health care. For example, families are provided with four health literacy workshops, led by members of the medical community, and Healthy Harlem staff encourage caregivers to connect with their children's health care provider to develop an age-appropriate action plan to attain health-related goals. Healthy Harlem staff partnered with a medical doctor and the Institute for Family Health, who operate school-based health centers at HCZ's two K-12 schools, in order to implement this programming. Families of students participating in Medical Support are also asked to participate in Family Fit, as described above.

This report focuses on the impact of Healthy Harlem on students in grades 4 and higher, who participated in the Prevention and/or Get Fit components.<sup>1</sup>

### **Evaluation of Healthy Harlem**

In early 2012, HCZ contracted with Mathematica Policy Research to design a comprehensive evaluation of Healthy Harlem. The evaluation, funded by The JPB Foundation in August 2012, includes an implementation study and an impact study. The implementation study examined implementation of Healthy Harlem in individual after-school sites to help HCZ

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<sup>1</sup> HCZ has also integrated the Healthy Harlem model into programs that work with new and expecting parents and very young children, in the first stage of HCZ's pipeline approach to youth development. At early childhood sites, curricula focus on (1) reinforcing development and learning, (2) creating opportunities for parent-child bonding, (3) empowering families to adopt healthy eating habits, (4) promoting physical activity through play, and (5) increasing exposure to healthy foods.

understand how the program was implemented and received by HCZ and Healthy Harlem staff, students, and caregivers.

The impact study was designed to assess the impact of Healthy Harlem on students' nutrition knowledge and attitudes, perceived social support for healthy eating and physical activity, fitness levels, and BMI. Impacts were measured separately for Healthy Harlem's two main components, Prevention and Get Fit. The evaluation builds on HCZ's three-year timeline for rolling out Healthy Harlem across its 21 after-school sites, and measures both short-term (one-year) and longer-term impacts of the Prevention and Get Fit components. Chapter II describes the design and analyses methods in more detail.

### **Overview of the report**

This report presents findings on the one-, two-, and three-year impacts of Healthy Harlem. The report is organized into five chapters. Chapter II provides an overview of the study design and methods, including data collection and outcome measures. Chapter III presents longitudinal impacts of the Prevention component and Chapter IV presents longitudinal impacts of the Get Fit component. Chapter V presents a summary and conclusions.

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## II. DATA AND METHODOLOGY

This chapter describes the study design, including information about the students included in the evaluation, the outcome measures examined, and the data collection methods used. It also presents the analysis methods used to estimate the impacts of Prevention and Get Fit.

### A. Study design and student sample

The evaluation design includes three cohorts of students based on the year their after-school site first implemented Healthy Harlem. We collected baseline data for each cohort in the fall of the first year of implementation and collected one-year follow-up data the following spring. In addition, we collected longer-term follow-up data from students in Cohorts 1 and 2. Table II.1 provides information about each cohort, including the number of sites, the initial year of Healthy Harlem implementation, the grade range of study participants, and the timing of data collection periods. Data were collected through a student survey, a fitness test, and through direct measurements of height and weight.<sup>2</sup>

We asked all eligible students at each site to participate in data collection activities. We excluded students from the analysis, however, if they did not attend an after-school site in its initial implementation year or if they moved from that site before we collected follow-up data. In addition, any student initially in a Cohort 1 site who joined either a Cohort 2 or 3 site in that cohort's initial implementation year was not included in the Cohort 2 or 3 analysis, because they had already received Healthy Harlem in a Cohort 1 site. Similarly, any student initially in a Cohort 2 site who joined a Cohort 3 site in its initial implementation year was not included in the Cohort 3 analysis. For the two- and three-year impact analyses, we also excluded students who, based on their grade in their site's initial implementation year, would graduate before the follow-up survey.

**Table II.1. Description of student sample, by cohort**

Cohort	Number of sites	Initial year of implementation	Grade range <sup>a</sup>	Baseline	One-year follow-up	Two-year follow-up	Three-year follow-up
1	8 <sup>b</sup>	2012–2013	4–12	Fall 2012	Spring 2013	Spring 2014	Spring 2015
2	4	2013–2014	4–12	Fall 2013	Spring 2014	Spring 2015	
3	9	2014–2015	4–8	Fall 2014	Spring 2015		

<sup>a</sup> Some HCZ after-school sites also include students in grades pre-kindergarten through 3. However, this report focuses on students in grades 4 and higher, because the student survey was administered to students in 4th grade and above. To maintain a consistent sample size in each analysis, we applied this restriction to all of the outcome measures.

<sup>b</sup> In fall 2012, 10 Cohort 1 sites implemented Healthy Harlem to their students. By spring of 2015, 8 Cohort 1 sites remained in the sample. Two of the original Cohort 1 sites closed in fall 2013 (with students moving to Cohort 3 sites) and one site closed in 2014 (with students moving to other Cohort 1 sites.)

<sup>2</sup> A parent survey administered to parents of younger students was comparable to the student survey, but it measured different outcomes—for example, parents' level of nutrition knowledge (rather than the students'), and parents' perceptions and attitudes about nutrition and physical activity; this report does not contain data from the parent survey.

The design separately assessed impacts of Healthy Harlem’s two main components:

1. **The Prevention component.** We used a quasi-experimental pre-test/post-test design to assess impacts of the Prevention component. Under this design, we estimated one-year impacts of the Prevention component by comparing student outcomes measured in the fall of the implementation year (baseline measures) with outcomes measured the following spring. To obtain estimates of longer-term impacts, we compared baseline measures with outcomes measured in the spring of each subsequent school year. Each of these comparisons focused on students who received the Prevention component *only*; as a result, the estimated impacts of the Prevention component are mostly based on students who started the program with healthy weights.<sup>3</sup>
2. **The Get Fit component.** We assessed one-year impacts of the Get Fit component using a random-assignment design. We randomly assigned middle and high school students with BMI at or above the 85th percentile and less than the 99th percentile to intervention or control groups. Students assigned to the intervention group participated in Get Fit and those assigned to the control group did not. We then compared outcomes for intervention (Get Fit) and control students, and the difference between the two groups provided an estimate of the one-year impact of Get Fit.

Because students assigned to the control group were eligible to participate in Get Fit the following school year, it was not possible to maintain the random assignment design and measure longer-term impacts of Get Fit. Instead, longer-term impacts examine the combined effect of participation in both Get Fit and the Prevention component of Healthy Harlem. These impacts were estimated for students in Cohorts 1 and 2 who were randomly assigned to Get Fit by comparing baseline measures collected in the fall of the year sites began implementing Healthy Harlem with followup measures collected two and three years later. In all cases, students were randomly assigned to Get Fit during their baseline year, but may not have received Get Fit in subsequent years.

## **B. Research objectives and outcome measures**

The study assessed the impact of Healthy Harlem in four key domains:

- Nutrition-related knowledge and attitudes
- Perceived social support for healthy eating and physical activity
- Fitness
- BMI

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<sup>3</sup> The one-year estimated impacts of the Prevention component included middle and high school students who were eligible for but did not receive Get Fit (that is, Cohort 1 and 2 students with BMI greater than the 85th percentile and less than the 99th percentile who were randomly assigned to the control group). The two- and three-year Prevention component estimates excluded these students because they received Get Fit during these years.

Next, we describe the specific outcome measures examined in each of these domains.

### 1. Nutrition-related knowledge and attitudes

**Nutrition knowledge.** We used two sets of questions in the student survey to assess students' nutrition knowledge. One set of questions assessed students' awareness of the "Go, Slow, Whoa Foods" concept used in the Healthy Harlem nutrition curriculum.<sup>4</sup> The survey presented students with a list of 13 different foods and asked how often each should be consumed. Response options were *almost anytime*, *only sometimes*, and *only once in a while*. Go, Slow, and Whoa foods were not identified as such and were randomly ordered. The following statement preceded the list of foods: "The next questions ask how often you *think* you should eat certain types of food." We used this phrasing to ensure that students understood that the questions focused on recommended eating practices rather than their usual eating habits.

The second set of questions included six items that assessed more general nutrition knowledge by asking students to identify statements as true or false (four items) or select appropriate foods or nutrient characteristics from a list. We computed a nutrition knowledge composite score for each student, reflecting the percentage of the 19 items answered correctly.

**Self-efficacy.** We used separate sets of questions in the student survey to assess self-efficacy related to (1) healthy eating and (2) physical activity. Self-efficacy is a measure of students' perceptions about their ability to follow recommended practices. We assessed self-efficacy related to healthy eating by asking students how confident they were in their ability to eat healthfully when eating with family, with friends, at their school, and at their after-school program. Response options included a little sure, sure, and very sure. Responses to questions about each of the four settings were scored on a scale from 1 (a little sure) to 3 (very sure) and the scores were averaged across questions for each student, for a maximum potential score of 3.

We assessed self-efficacy related to physical activity by asking students how confident they were in their ability to be physically active in a variety of situations. These included being physically active after school, when the opportunity is available to watch television or play video games instead, when it is very hot or cold outside, when they have to stay at home, and no matter how busy the day is. We also asked whether they had the skills needed to be physically active. Students responded yes or no to each item. Responses to questions about each situation were scored (yes = 2; no = 1) and the scores were averaged across questions for each student, for a maximum potential score of 2.

**Importance of physical activity.** We assessed students' attitudes about the importance of physical activity by asking them to rate the importance of exercising regularly, keeping physically fit, and being physically active. Response options were not true at all, not very true, somewhat true, and very true. Responses to each statement were scored on a scale from 1 (not

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<sup>4</sup> Go foods are the most nutritious and can be consumed almost anytime; Slow foods are higher in fat, sugar, and/or calories and should not be consumed every day (only sometimes); and Whoa foods are the least nutritious (highest in fat, sugar, and/or calories and often low in nutrients) and should be consumed only once in a while and in small portions.

true at all) to 4 (very true), and the scores were averaged across questions for each student, for a maximum potential score of 4.

## **2. Perceived social support for healthy eating and physical activity**

Separate sets of questions in the student survey assessed students' perceptions of social support for healthy eating and physical activity.

**Social support for healthy eating.** To assess perceptions of social support for healthy eating, we asked students how often, over the past 30 days, they received positive reinforcement for healthy eating habits. Questions asked about three different types of reinforcements (compliments about eating habits, encouragement to eat fruits and vegetables, and discussions about healthy eating habits) from three different groups (family and household members, friends, and after-school staff), for a total of nine questions. Responses were scored on a scale from 0 (none) to 4 (very often), and the scores were averaged across questions for each student, for a maximum potential score of 4.

**Social support for physical activity.** We assessed students' perceptions about social support for physical activity using two sets of questions. The first set of questions, focusing on social support for physical activity at school and after-school programming, asked students to agree or disagree with statements about participating in sports and physical activity and discussions among three social groups—their closest friends, teachers and staff at school, and teachers and staff at their after-school program. Response options were disagree, disagree a little, agree a little, and agree a lot. Responses were scored on a scale from 1 (disagree) to 4 (agree a lot), and the scores were averaged across questions for each student, for a maximum potential score of 4.

The second set of items, which focused on students' perceived social support for physical activity from parents and friends, asked students if they believed they could ask a parent or other adult or their best friend to be physically active with them. These items asked for a yes or no response and were scored (yes = 2; no = 1). The scores were averaged across questions for each student, for a maximum potential score of 2.

## **3. Fitness**

We used the PACER (Progressive Aerobic Cardiovascular Endurance Run) test to assess students' levels of aerobic fitness. The PACER is a multistage test that uses a 20-meter shuttle run to measure aerobic fitness. Students continuously run laps in rhythm with recorded beeps. The intensity of the required exertion increases as the test progresses and the recorded beeps get progressively closer together. The goal is to run as many laps as possible; students continue running laps until they can no longer keep pace with the beeps.

We assessed students' levels of fitness by examining the number of PACER laps (or shuttles) completed and whether students met minimum benchmarks for the number of completed PACER laps based on age and gender (Connecticut State Department of Education 2009). Students who met these benchmarks fell within the "Harlem Fitness Zone." Benchmarks were available only for students 10 and older, so we did not compute the Harlem Fitness Zone measure for students younger than 10.

#### 4. Body Mass Index

BMI is a commonly accepted measure for assessing weight status and classifying an individual as overweight or obese. BMI is a ratio of weight to height, defined as [weight (kg)/height (m)<sup>2</sup>]. Among children and adolescents ages 2 through 20, BMI is assessed on the basis of age and gender using BMI-for-age percentiles established by the Centers for Disease Control and Prevention (CDC) (Kuczmarski et al. 2002). The CDC has defined four cutoffs to use in classifying children's weight status based on their BMI-for-age percentile:

Underweight:	less than the 5th percentile
Normal weight:	5th to 84th percentile
Overweight:	85th to 94th percentile
Obese:	95th percentile or higher

We estimated BMI-for-age percentiles using the CDC's Children's BMI Tool for Schools ([http://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/tool\\_for\\_schools.html](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html); Nihiser et al, 2007).

In estimating impacts on BMI, we examined three different measures: (1) the percentage of students who were obese, (2) the percentage of students who were overweight or obese, and (3) BMI  $z$ -score. A  $z$ -score reflects the number of standard deviations a student's BMI is from the mean BMI for the CDC reference population for a given age and gender. A positive  $z$ -score indicates a higher-than-average BMI compared with other children of the same age and gender, and a negative  $z$ -score indicates a lower-than-average BMI. Thus, if Healthy Harlem had a favorable effect on children's BMIs, we would expect to see a decrease in mean BMI  $z$ -score.

#### C. Data collection methods

We collected data through a student survey, a PACER fitness test, and direct measurements of height and weight. In the sections that follow, we describe the methods used in collecting data and report sample sizes and response rates for each type of data.

##### 1. Student survey

Mathematica staff administered a 30-minute paper-pencil survey to students in grades 4 through 12 at their HCZ after-school sites. The same survey was administered to students in fall 2012 through spring 2015, across six data collection periods. As summarized in Table II.2, the cohorts of students, sample sizes, and response rates varied by data collection period; however, response rates for all rounds were at least 90 percent.

**Table II.2. Student survey sample and response rates, by data collection period**

Data collection period	Cohorts surveyed	Number of eligible students <sup>a</sup>	Number of students with completed surveys	Response rate
Fall 2012	1	2,111	1940	92%
Spring 2013	1	2,011	1807	90%
Fall 2013	2	695	648	93%
Spring 2014	1, 2	2,466	2227	90%
Fall 2014	3	529	481	91%
Spring 2015	1, 2, 3	2,936	2633	90%

<sup>a</sup> All after-school students in grades 4 through 12 were eligible for the survey, with a few exceptions. Students were excluded from the sample if they were unable to complete the survey due to a cognitive disability or if they did not speak English.

## 2. PACER fitness test

Mathematica trained and certified Healthy Harlem staff to administer the PACER test in fall 2012. Staff administered and scored the test following protocols used in FITNESSGRAM<sup>®</sup>, a comprehensive and widely used youth fitness assessment and monitoring system developed by the Cooper Institute. During each data collection period, Mathematica conducted quality assurance observations on the first day of testing in each site and provided technical assistance and retraining as needed. Healthy Harlem staff recorded test results on hard-copy forms, entered those results by hand into an electronic database, and uploaded them to a secure SharePoint site. Table II.3 shows cohorts, sample sizes, and response rates for the PACER test.

**Table II.3. PACER sample and response rates, by data collection period**

Data collection period	Cohorts surveyed	Number of eligible students <sup>a</sup>	Number of students with completed tests	Response rate
Fall 2012	1	2,112	1,957	93%
Spring 2013	1	2,015	1,734	86%
Fall 2013	2	695	658	95%
Spring 2014	1, 2	2,467	2,174	88%
Fall 2014	3	534	465	87%
Spring 2015	1, 2, 3	2,946	2,731	93%

<sup>a</sup> All after-school students in grades 4 through 12 were eligible for the PACER test.

## 3. Height and weight measurements

Mathematica trained HCZ staff to collect direct measurements of students' heights and weights (which we subsequently used to compute BMI-for-age percentiles). Data were collected using research-quality scales and stadiometers (to measure height). An expert in anthropometry (measurement of the human body) provided specifications for all equipment and helped lead the initial training for Healthy Harlem program managers, site staff, and selected HCZ staff. During each data collection period, Mathematica conducted quality assurance observations on the first

day of measurements in each site and provided technical assistance and retraining as needed. Healthy Harlem staff recorded test results were on hard-copy forms, entered those results by hand into an electronic database, and uploaded them to a secure SharePoint site. Table II.4 shows cohorts, sample sizes, and response rates for height and weight measurements.

Additional height and weight measurements were taken for students included in the random assignment evaluation of the Get Fit component (that is, Cohort 1 and 2 students with BMI greater than the 85th percentile and less than the 99th percentile, based on baseline [fall] measurements). These additional measurements were taken in the winter, just before intervention students started receiving Get Fit, and these updated BMI measurements served as the baseline measures for assessing the impact of Get Fit.

**Table II.4. Height and weight measurements' sample and response rates, by data collection period**

Data collection period	Cohorts surveyed	Number of eligible students <sup>a</sup>	Number of students with completed measurements	Response rate
Fall 2012	1	2,112	2,028	96%
Winter 2013	1 <sup>b</sup>	521	506	97%
Spring 2013	1	2,015	1,828	91%
Fall 2013	2	695	662	95%
Winter 2014	2 <sup>b</sup>	88	82	93%
Spring 2014	1, 2	2,467	2,097	85%
Fall 2014	3	534	480	90%
Spring 2015	1, 2, 3	2,946	2,763	94%

<sup>a</sup> All after-school students were eligible for fall and spring measurements.

<sup>b</sup> During the winter data collection periods, height and weight measurements were completed only for students who were part of the Get Fit random assignment component of the study.

## D. Analysis methods

This section provides an overview of the analysis methods used to estimate the impact of Prevention and Get Fit, including the durations over which impacts were measured and the analytic approaches used for each program component. Appendix A provides a more detailed discussion of methods.

### 1. Estimating the impacts of the Prevention component

We assessed the impact of the Prevention component using a pre-post approach, which compared outcomes measured in the fall of a cohort's first year of implementation with outcomes measured the following spring. Table II.5 describes the timing of comparisons for each cohort. For example, to estimate one-year impacts of Prevention for students in Cohort 1 sites, we compared outcomes measured in fall 2012 with outcomes measured in spring 2013. Similarly, two-year impacts compared outcomes in fall 2012 and spring 2014, and three-year impacts compared outcomes in fall 2012 and spring 2015.

**Table II.5. Timing of pre-post comparisons in Prevention analysis**

	One-year impact	Two-year impact	Three-year impact
Cohort 1	Fall 2012 versus spring 2013	Fall 2012 versus spring 2014	Fall 2012 versus spring 2015
Cohort 2	Fall 2013 versus spring 2014	Fall 2013 versus spring 2015	
Cohort 3	Fall 2014 versus spring 2015		

Prevention was offered to all students in pre-kindergarten through 12th grade attending after-school programs. Because the student survey was administered only to students in 4th grade and higher, we restricted the analysis of the impact of Prevention on students' outcomes over one year to students in grades 4 to 12 in the fall of their sites' implementation year. For consistency across outcome measures, we applied this restriction to all outcomes, including those based on fitness and BMI data.

For the two- and three-year impact analyses, we excluded students who, based on their grade in their site's implementation year, would graduate before the follow-up survey. We restricted the analysis of the two-year impact of Prevention to students in grades 4 to 11 in their sites' implementation year in order to obtain a follow-up observation for 11th-grade students before they graduated at the end of 12th grade. Similarly, we restricted the analysis of the three-year impact of Prevention to students in grades 4 to 10 in their sites' implementation year in order to obtain a follow-up observation for 10th grade students before 12th grade. Appendix A discusses additional restrictions.

To estimate impacts we used t-tests to determine whether fall-to-spring differences in outcomes were statistically significant. Statistical significance is a measure of how confident we are that the impact was true and did not arise purely by chance. Each student's observation was weighted in the analyses to ensure that the impacts we estimated were representative of all HCZ students eligible to receive Healthy Harlem services. The weights account for nonresponse in the student survey and for missing data in both the PACER and BMI data.

We estimated the impacts of prevention on many outcomes. Performing multiple statistical tests means that it is more likely that we will find some differences to be statistically significant simply by chance. To help guard against this, before analyzing the data we organized all outcomes into domains based on the underlying concepts measured. The four domains described previously were considered to be the focus of confirmatory analyses for rigorous testing of the study's central hypotheses, whereas outcomes in other domains not presented in this report were included in less rigorous exploratory analyses for examining relationships in the data and identifying hypotheses for future analysis. Within each outcome domain for the confirmatory analyses, we adjusted for multiple hypothesis testing by holding the findings to stricter standards for determining statistical significance.

Measuring the outcomes at different points in time (fall and spring in one school year or fall in one school year and spring in subsequent school years) introduces the possibility that the impact estimate may be measuring the combined effect of the true impact of Prevention and influential external factors that may have changed over time. Examples may include national shifts in healthy eating or physical activity and/or changes in the prevalence of obesity. It may also reflect changes in student characteristics not measured in the data. This type of bias is

generally referred to as bias from possible time confounds. We attempted to decrease this bias by accounting for changes in student characteristics over time, but the estimates in this report should be interpreted with this caveat in mind.

The figures in Chapters III present estimates of the fall-to-spring changes over one, two, and three years. When interpreting these findings, it is important to acknowledge that differences in impact estimates over time may reflect true changes in the impact of Prevention over time or may reflect differences across cohorts in student characteristics or in the implementation of the program across sites. For example, it is possible that observing an impact over one year for Cohorts 1, 2, and 3, but not observing an impact over three years for Cohort 1, reflects differences in site and student characteristics across cohorts. When additional rounds of follow-up data are collected for Cohorts 2 and 3, we will be able to estimate two- and three-year impacts for Cohorts 1, 2, and 3 combined. This will allow us to more definitely attribute differences in impact estimates over time to changes in the effectiveness of the program over time, rather than to potential differences across cohorts in student and site characteristics.

## **2. Estimating the impacts of Get Fit**

For students in Cohorts 1 and 2, we randomly assigned to Get Fit students in grades 6 through 12 who had BMI at or above the 85th percentile and below the 99th percentile of the BMI distribution. Students in the control group received Prevention only; students in the intervention group received both Get Fit and Prevention.

Random assignment occurred during the first year of Healthy Harlem intervention at each site. Students in grades 6 to 11 who were randomly assigned to the intervention group were offered Get Fit that year, and control group students were offered it the next year, provided they remained eligible for Get Fit. All students in grade 12 who were eligible for Get Fit were offered Get Fit because they would not have the opportunity to receive it after graduating if they were placed in the control group. Because there was no control group for 12th-grade students, we restricted the analyses of the impact of Get Fit to students in grades 6 through 11.

Determining program impacts in a random assignment evaluation requires only a comparison of outcomes between the intervention and control group in the spring after Get Fit is offered. However, because the design is strengthened when baseline measures are also included, we measured the impact of the Get Fit component using outcome measures from both the fall and the spring. We used a difference-in-differences approach in which we compared the average fall-to-spring change in an outcome for the control group (which measures the impact of the Prevention component) to the average fall-to-spring change in an outcome for the intervention group (which measures the impact of both the Prevention and Get Fit components). The impact of Get Fit was measured over a one-year period only.

We were unable to estimate longer-term impacts of Get Fit due to the staggered research design in which students in the control group in one year received Get Fit in the subsequent year. For example, for sites in Cohort 1 that implemented Healthy Harlem in the first year of the evaluation corresponding to school year (SY) 2012–2013, students in the control group in SY 2012–2013 received Get Fit the following year, provided they remained eligible. Similarly, for Cohort 2 sites that first implemented Healthy Harlem in SY 2013–2014, students in the control group in SY 2013–2014 received Get Fit the following year. Lacking a control group of students

who did not receive Get Fit for more than one year, we could not isolate the impact of Get Fit over two and three years separate from the impact of Prevention. Thus, in place of assessing the longer-term impacts of Get Fit, based on random assignment, we estimated the impact over two and three years of receiving both Prevention and Get Fit among students who were assigned to the intervention group in the first year. Because there was no control group in this analysis, we estimated the impact of Get Fit plus Prevention using the same pre-post analysis methods used to estimate the impact of the Prevention component. All analyses were weighted and adjusted for hypothesis testing of several outcomes within each domain. Table II.6 summarizes the analytic approach and data time periods used to estimate the one-year impacts of Get Fit and the two- and three-year impacts of Get Fit and Prevention.

**Table II.6. Timing of difference-in-differences comparisons in one-year Get Fit analysis and pre-post comparisons in two- and three-year analysis of Get Fit and Prevention**

	One-year impact of Get Fit	Two-year impact of Prevention and Get Fit	Three-year impact of Get Fit and Prevention
Analytic approach	Difference-in-differences based on random assignment	Pre-post	Pre-post
Cohort 1	Fall 2012 versus Spring 2013	Fall 2012 versus Spring 2014	Fall 2012 versus Spring 2015
Cohort 2	Fall 2013 versus Spring 2014	Fall 2013 versus Spring 2015	
Cohort 3	n.a.		

Note: For BMI-related outcomes, we used students' winter BMI measurements taken immediately before Get Fit began, as opposed to their fall measurements. For consistency across outcomes, we refer to all changes as being measured from fall to spring.

n.a. = not applicable. In Cohort 3 sites, the number of Get Fit-eligible students was too small to use the random assignment approach. Consequently, all Get Fit-eligible students in Cohort 3 sites received Get Fit. Without a control group, we could not estimate the one-year impact of Get Fit.

We restricted the analysis of the impact of Get Fit plus Prevention to students in grades 6 to 11 in their sites' implementation year (for two-year impacts) and students in grades 6 to 10 (for three-year impacts) in order to have a follow-up observation before the students graduated. These analyses were restricted to students in Cohort 1 who were in the intervention group in SY 2012–2013 and students in Cohort 2 who were in the intervention group in SY 2013–2014, regardless of participation in Get Fit in subsequent years. Thus, these analyses focus on the longer-term impact on students who were initially assigned to Get Fit and did not continue to receive Get Fit over time. Appendix A discusses additional restrictions.

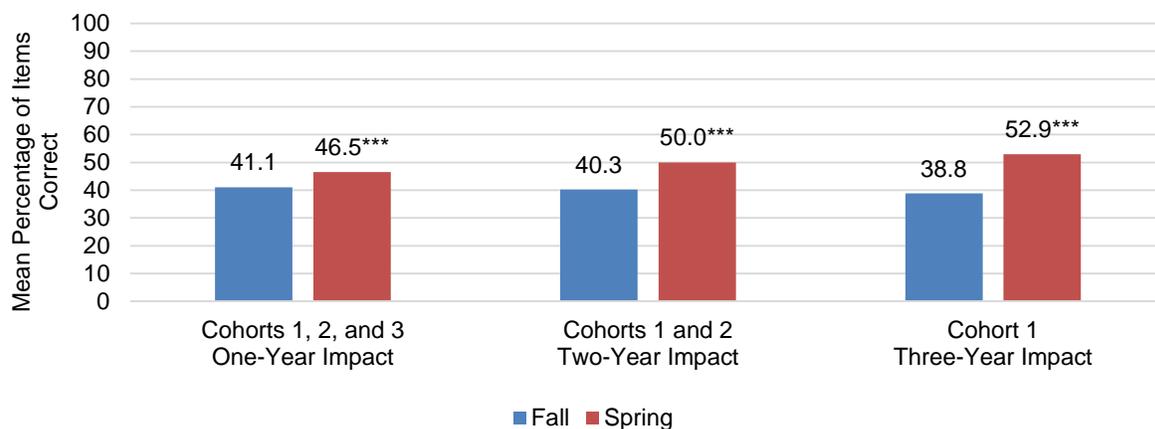
### III. IMPACTS OF THE PREVENTION COMPONENT

This chapter presents findings from the analysis of the impact of the Prevention component on students' knowledge and attitudes, perceived social support, fitness, and BMI. The impacts were measured over one-, two-, and three-year periods. As described in Chapter II, one-, two-, and three-year impacts are measured for different cohorts of students, depending on the year their after-school site first implemented Healthy Harlem. In all cases, the samples include students who received *only* the Prevention component of Healthy Harlem. In the sections below, we present findings for the full sample at each time period for each outcome. If there was no significant impact for the full sample, but we did find a significant impact for either boys or girls, then we also present findings separately by gender. A complete set of findings for all students and for boys and girls, separately, is presented in Appendix B.<sup>5</sup>

#### A. Nutrition-related knowledge and attitudes

The Prevention component increased students' nutrition knowledge over one, two, and three years. The mean percentage of correct nutrition knowledge items increased by 5.4 percentage points over one year, from 41.1 to 46.5 percent (Figure III.1). The improvement was larger over two and three years, with the mean percentage of correct items increasing by 9.7 percentage points over two years (from 40.3 to 50.0 percent) and 14.1 percentage points over three years (from 38.8 to 52.9 percent).

**Figure III.1. Impact of the Prevention component on mean percentage of nutrition knowledge items answered correctly**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

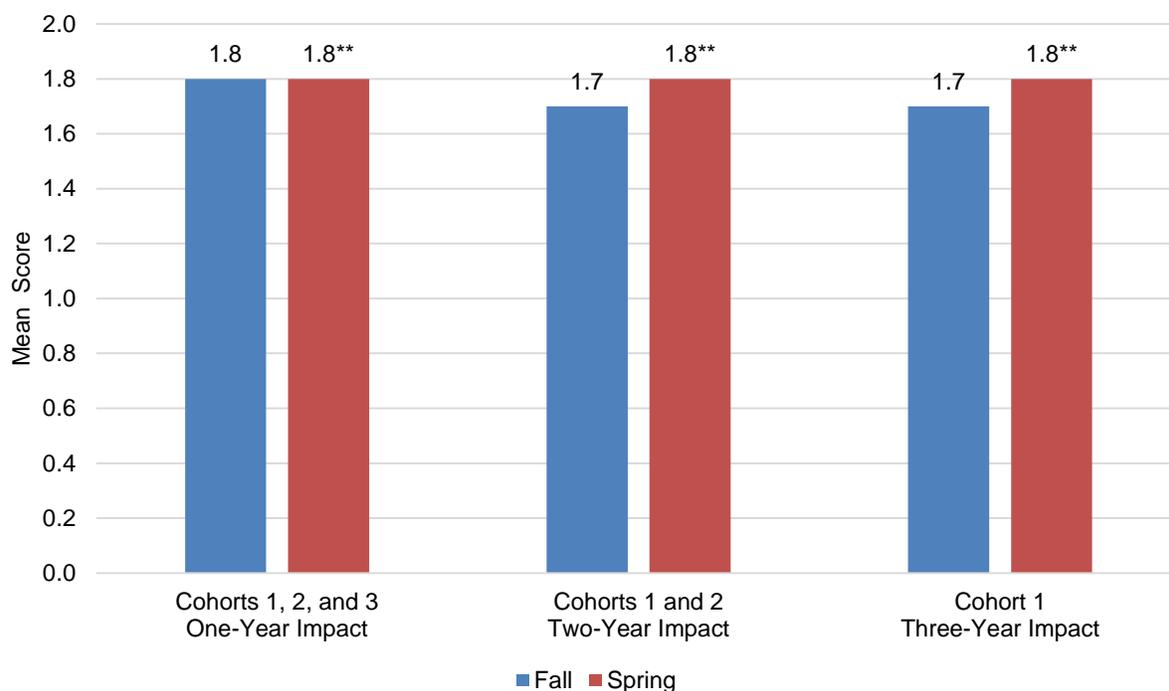
Note: Estimates were regression adjusted for students' gender, age, grade, and site. One-year estimates based on 1,330 students. Two-year estimates based on 698 students. Three-year estimates based on 267 students.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

<sup>5</sup> We also estimated one- and two-year impacts for each cohort separately. The impacts for each cohort were generally similar to those presented for combined cohorts.

The findings related to students' attitudes toward healthy eating and physical activity were mixed. The Prevention component increased students' self-efficacy related to physical activity over one, two, and three years by up to 0.1 percentage points (Figure III.2). Based on the distribution of student scores, this is a large improvement, equal to about one-half of a standard deviation. There were generally no statistically significant changes in self-efficacy related to healthy eating, or in perceptions about the importance of physical activity. However, the mean score for self-efficacy related to healthy eating decreased over one year (Figure III.3) and the mean score for the importance of physical activity decreased over two years (Figure III.4). These decreases are very small changes, equal to about one-sixth of a standard deviation and, while statistically significant, are not substantively meaningful.

**Figure III.2. Impact of the Prevention component on mean scores for self-efficacy related to physical activity**

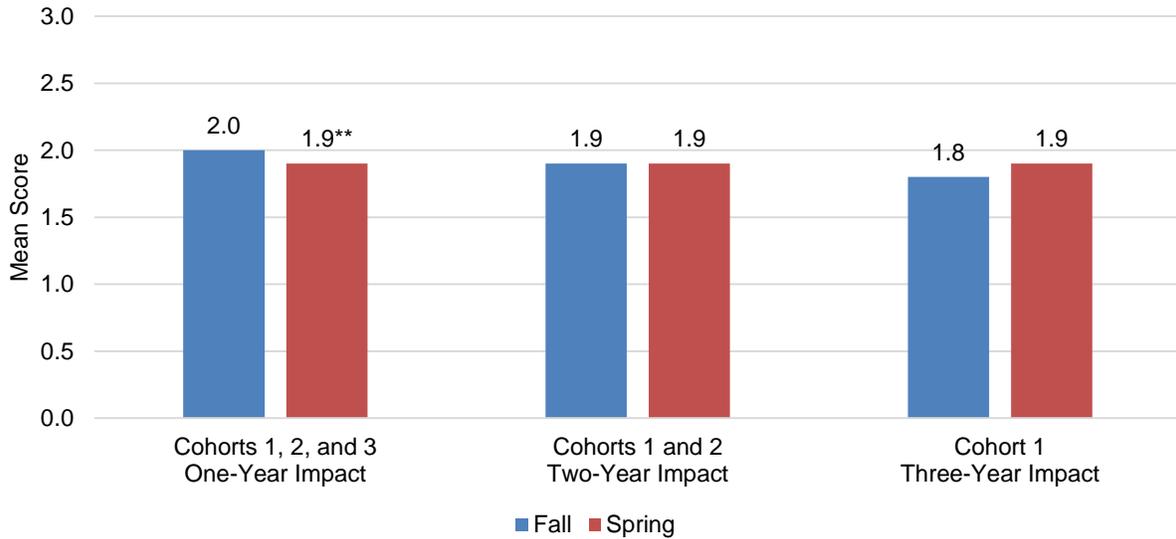


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. One-year estimates based on 1,411 students. Two-year estimates based on 738 students. Three-year estimates based on 277 students.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test. Fall-to-spring difference over one year is positive and statistically significant when not rounded to a tenth of a decimal place.

**Figure III.3. Impact of the Prevention component on mean scores for self-efficacy related to healthy eating**

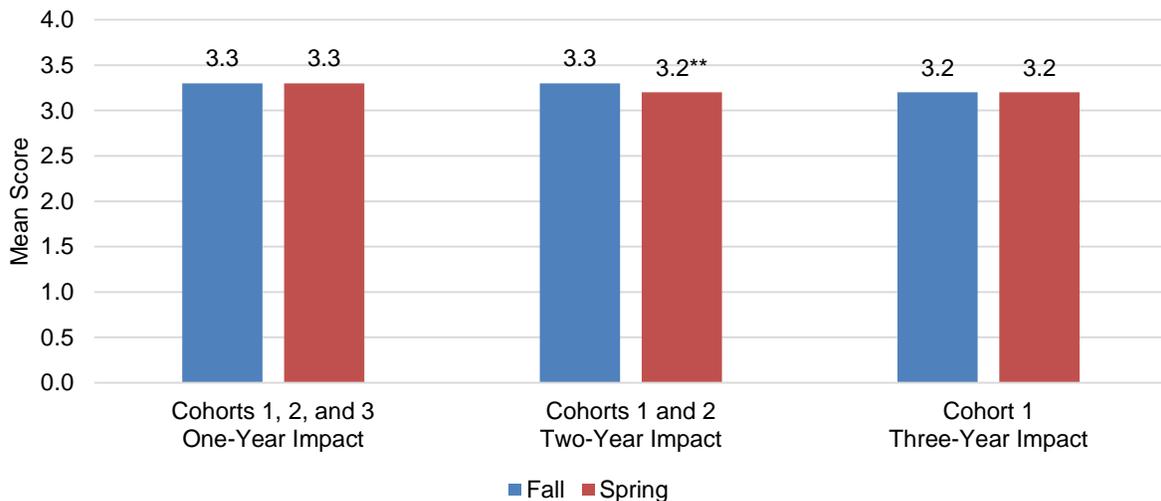


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students’ gender, age, grade, and site. One-year estimates based on 1,395 students. Two-year estimates based on 731 students. Three-year estimates based on 278 students.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

**Figure III.4. Impact of the Prevention component on mean scores for perceived importance of physical activity**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

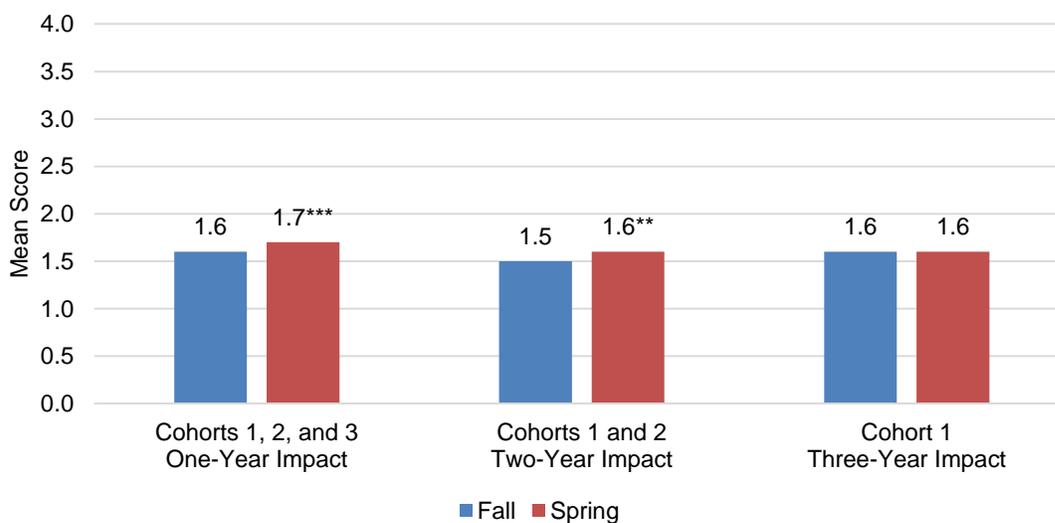
Note: Estimates were regression adjusted for students’ gender, age, grade, and site. One-year estimates based on 1,401 students. Two-year estimates based on 733 students. Three-year estimates based on 276 students.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

## B. Perceived social support for healthy eating and physical activity

The Prevention component increased students' perceived social support for healthy eating and physical activity over one year, but the improvements were not always sustained over two or three years. Social support for healthy eating increased over one year by 0.1 points (Figure III.5). This impact was sustained over two years, but not over three years. Social support for physical activity among parents and best friends also increased over one and two years (Figure III.6), but not over three years. Perceived social support for physical activity at school and after-school programming increased over one year (Figure III.7), but not over two or three years. There were no statistically significant changes in any of the measures of social support over three years (Figures III.5–III.7). Overall, the improvements of these measures over one or two years, while statistically significant, were very small and were not substantively meaningful.<sup>6</sup>

**Figure III.5. Impact of the Prevention component on mean scores for perceived social support for healthy eating**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

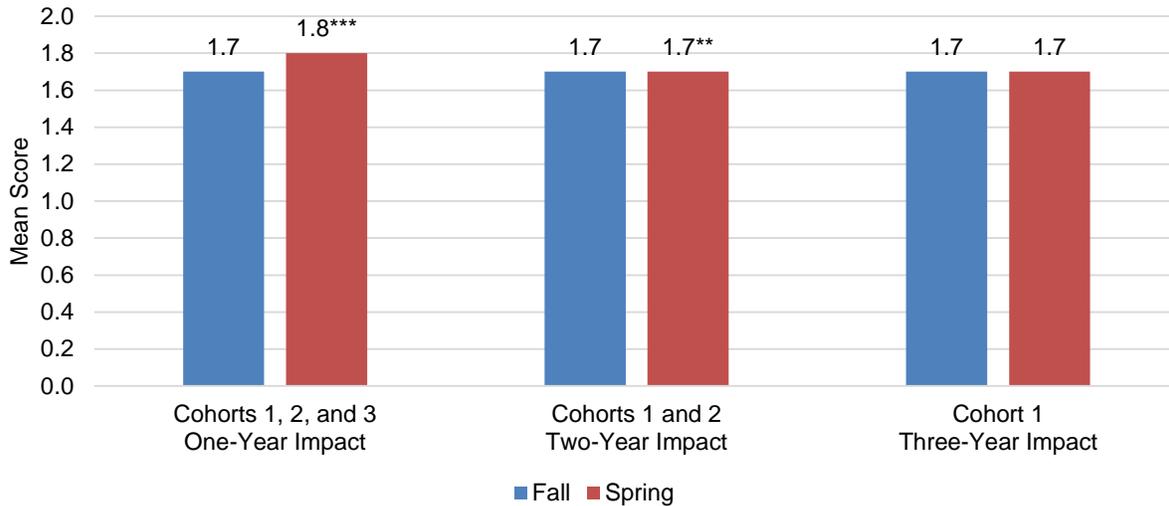
Note: Estimates were regression adjusted for students' gender, age, grade, and site. One-year estimates based on 1,385 students. Two-year estimates based on 728 students. Three-year estimates based on 278 students.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

<sup>6</sup> The improvement in social support for healthy eating was equal to about one-tenth of a standard deviation, the improvement in social support for physical activity from parents and friends was about one-third of a standard deviation, and the improvement in social support for physical activity at school and after-school programming was about one-sixth of a standard deviation.

**Figure III.6. Impact of the Prevention component on mean scores for perceived social support for physical activity from parents or friends**



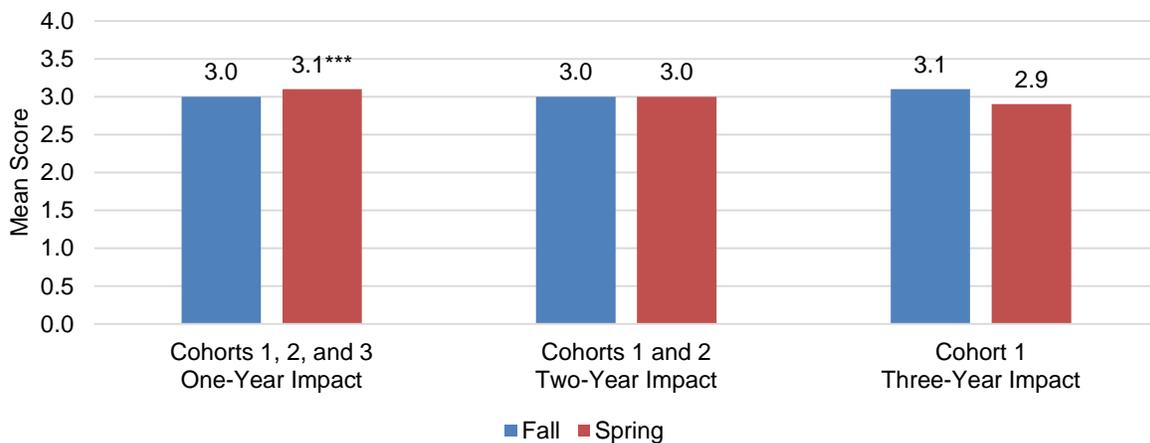
Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students’ gender, age, grade, and site. One-year estimates based on 1,410 students. Two-year estimates based on 738 students. Three-year estimates based on 277 students. The two-year impact (for Cohorts 1 and 2) is statistically significant despite showing no change from fall to spring when the estimates are rounded to a tenth of a decimal place.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure III.7. Impact of the Prevention component on mean scores for perceived social support for physical activity at school and after-school programming**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

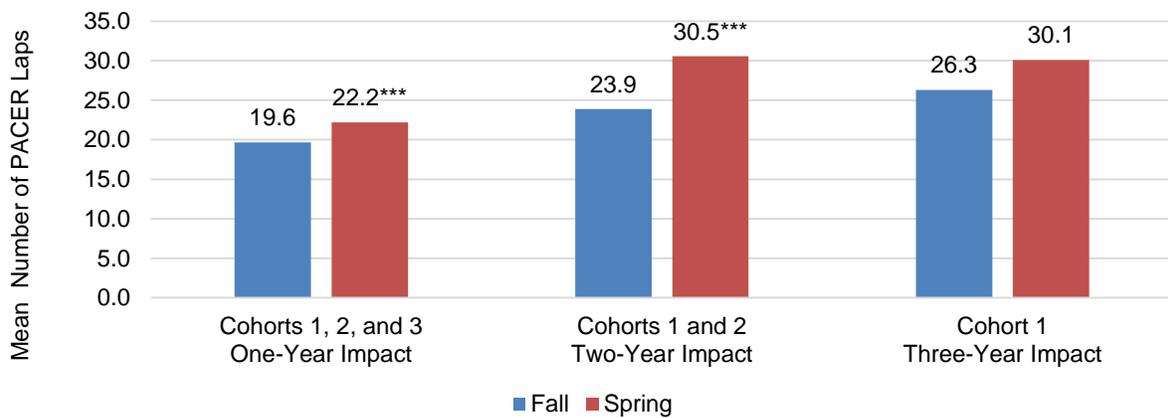
Note: Estimates were regression adjusted for students’ gender, age, grade, and site. One-year estimates based on 1,414 students. Two-year estimates based on 739 students. Three-year estimates based on 277 students.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

**C. Fitness**

The Prevention component increased both measures of students’ fitness over one and two years. The mean number of PACER laps increased by 2.6 laps over one year, from 19.6 to 22.2 laps, and by 6.6 laps over two years, from 23.9 to 30.5 laps (Figure III.8). Although there was also an increase for all students over three years, from 26.3 to 30.1 laps, the change was not statistically significant at the 0.05 level. The Prevention component also increased the percentage of students in the Harlem Fitness Zone by 8.1 percentage points over one year, from 37.9 to 46.0 percent, and by 15.4 percent over two years, from 33.2 to 48.6 percent (Figure III.9). However, there was no statistically significant change in the percentage of students in the Harlem Fitness Zone over three years.

**Figure III.8. Impact of the Prevention component on mean number of PACER laps**

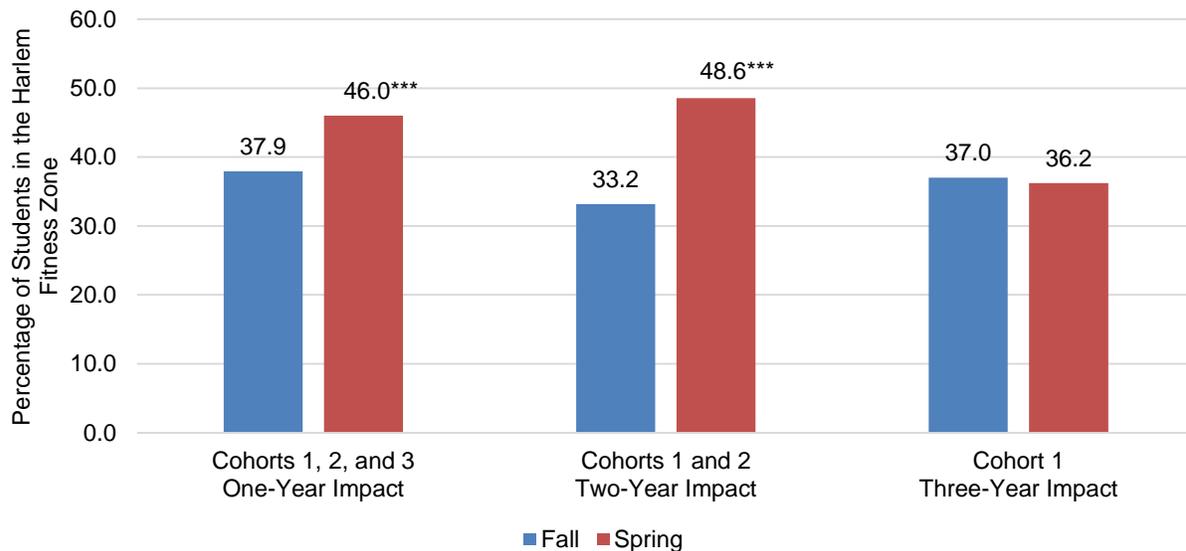


Source: Healthy Harlem evaluation, 2012–2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

Note: Estimates were regression adjusted for students’ gender, age, grade, and site. One-year estimates based on 1,461 students. Two-year estimates based on 811 students. Three-year estimates based on 295 students.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure III.9. Impact of the Prevention component on percentage of students in the Harlem Fitness Zone**



Source: Healthy Harlem evaluation, 2012-2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

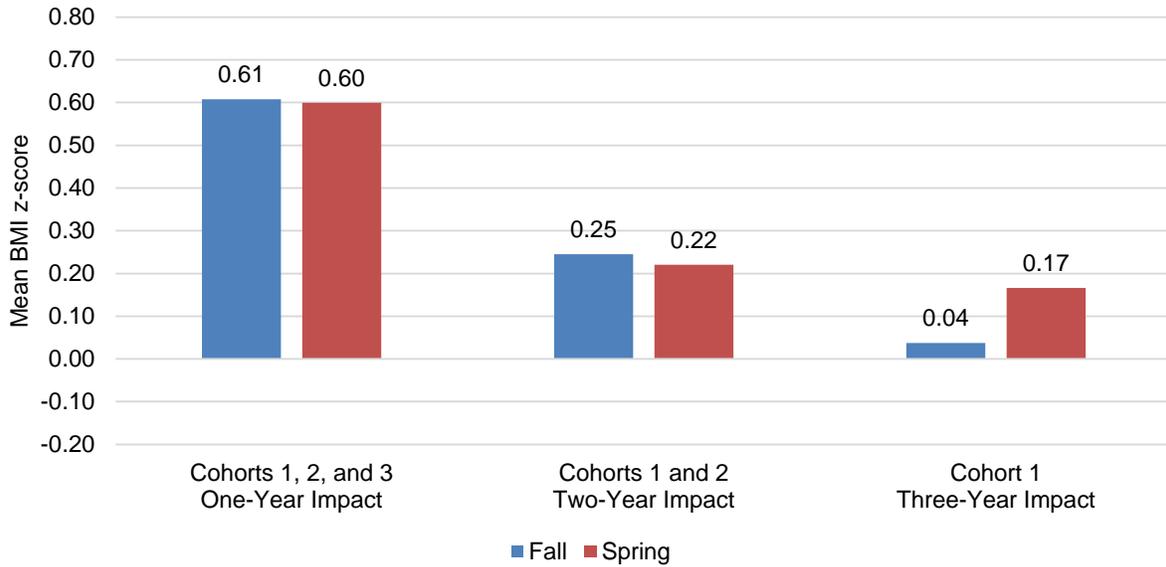
Note: Estimates were regression adjusted for students' gender, age, grade, and site. One-year estimates based on 1,096 students. Two-year estimates based on 646 students. Three-year estimates based on 273 students.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

#### D. Body Mass Index

Overall, the Prevention component did not have an impact on students' measures of BMI over one, two, or three years. However, there were positive impacts for girls over one and two years. There were no statistically significant changes in the mean BMI  $z$ -score for all students over time (Figure III.10). As discussed in Chapter II, this is consistent with the fact that nearly all students included in this analysis had BMIs in the healthy normal weight range at the start of the program and, thus, were not expected to reduce BMI. The mean BMI  $z$ -score decreased for girls, however, by about 0.1 over one year (from 0.67 to 0.61) and by about 0.2 over two years (from 0.39 to 0.17); there was no statistically significant change over three years (Figure III.11). In contrast to the findings for girls, there were no statistically significant changes over time for boys (Figure III.12).

**Figure III.10. Impact of the Prevention component on mean BMI z-score**

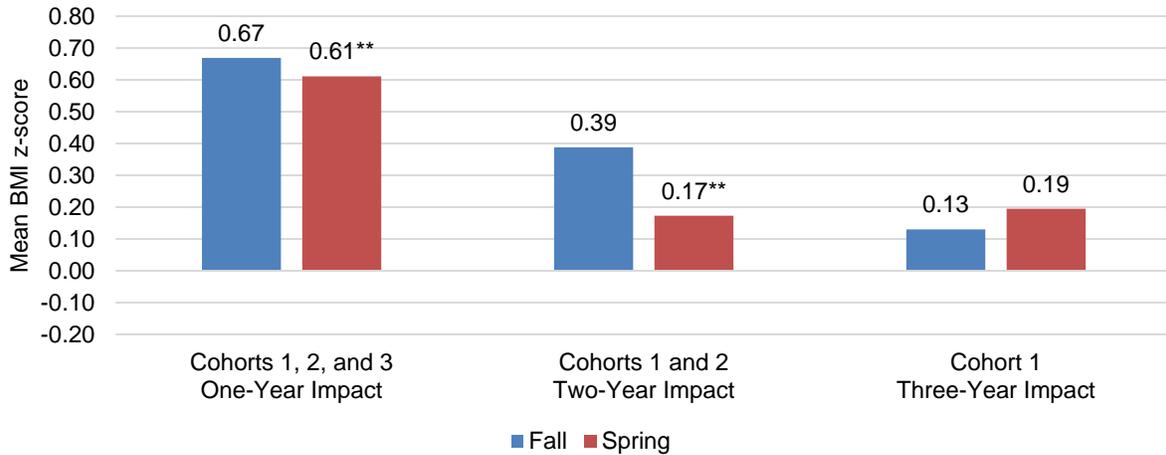


Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Notes: Estimates were regression adjusted for students' gender, age, grade, and site. One-year estimates based on 891 students. Two-year estimates based on 608 students. Three-year estimates based on 205 students. Differences between fall and spring were not statistically significant at the  $p < 0.01$  level, two-tailed test.

The mean BMI z-scores for the two- and three-year impacts are less than the mean BMI z-scores for the one-year impact because the one-year estimates included students who were eligible for but did not receive Get Fit (that is, Cohort 1 and 2 students with BMI greater than the 85th percentile and less than the 99th percentile who were randomly assigned to the control group). The two- and three-year Prevention component estimates excluded these students because they received Get Fit during these years.

**Figure III.11. Impact of the Prevention component on mean BMI z-score of girls**



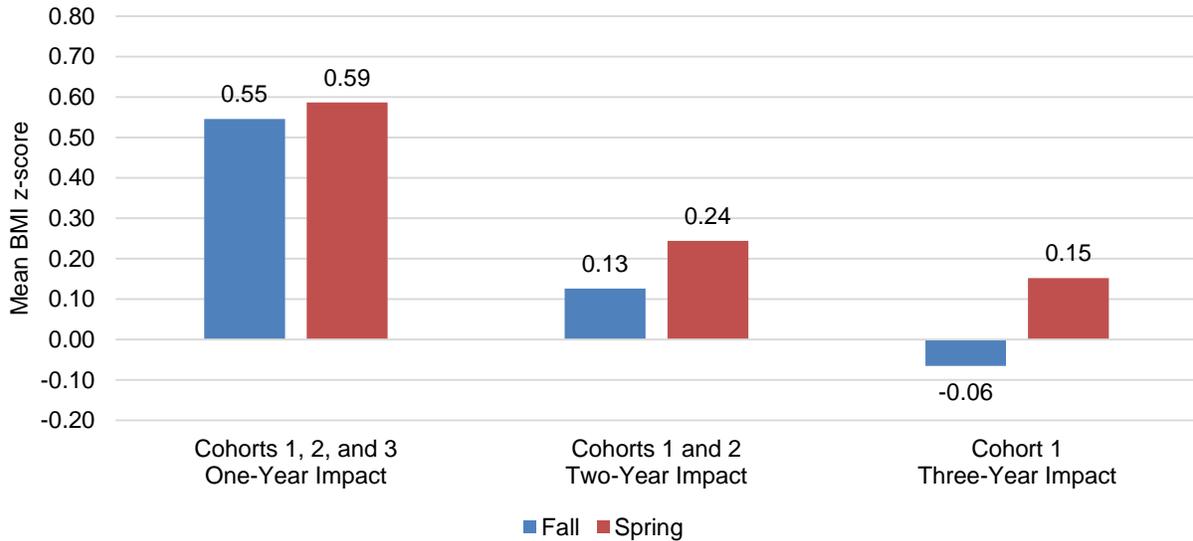
Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Notes: Estimates were regression adjusted for students’ age, grade, and site. One-year estimates based on 433 students. Two-year estimates based on 297 students. Three-year estimates based on 96 students.

The mean BMI z-scores for the two- and three-year impacts are less than the mean BMI z-scores for the one-year impact because the one-year estimates included students who were eligible for but did not receive Get Fit (that is, Cohort 1 and 2 students with BMI greater than the 85th percentile and less than the 99th percentile who were randomly assigned to the control group). The two- and three-year Prevention component estimates excluded these students because they received Get Fit during these years.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

**Figure III.12. Impact of the Prevention component on mean BMI z-score of boys**



Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Notes: Estimates were regression adjusted for students’ age, grade, and site. One-year estimates based on 459 students. Two-year estimates based on 311 students. Three-year estimates based on 109 students.

Differences between fall and spring were not statistically significant at the  $p < 0.01$  level, two-tailed test.

The mean BMI z-scores for the two- and three-year impacts are less than the mean BMI z-scores for the one-year impact because the one-year estimates included students who were eligible for but did not receive Get Fit (that is, Cohort 1 and 2 students with BMI greater than the 85th percentile and less than the 99th percentile who were randomly assigned to the control group). The two- and three-year Prevention component estimates excluded these students because they received Get Fit during these years.

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## IV. IMPACTS OF GET FIT

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This chapter presents findings from the analysis of the impact of Get Fit on students' knowledge and attitudes, perceived social support, fitness, and BMI. We present findings for the full sample at each time period. If there was no significant impact for the full sample, but we did find a significant impact for either boys or girls, then we also present findings separately by gender. We also present findings by gender if there was a significant impact for the full sample that was driven by impacts for one gender and not the other. A complete set of findings for the full sample and for boys and girls, separately, is presented in Appendix B.<sup>7</sup>

As described in Chapter II, we assessed one-year impacts of Get Fit using a random assignment design. Eligible students in Cohorts 1 and 2 (those in grades 6 to 11 with BMI at or above the 85th percentile and less than the 99th percentile) were randomly assigned to intervention or control groups during the first year their after-school site implemented Healthy Harlem.<sup>8</sup> Students assigned to the intervention group participated in Get Fit, in addition to the Prevention component, and those assigned to the control group participated only in the Prevention component.

Because students assigned to the control group were eligible to participate in Get Fit the following school year, it was not possible to maintain the random assignment design and measure longer-term impacts of Get Fit. Instead, longer-term impacts examine the combined effect of participation in both the Get Fit and Prevention components of Healthy Harlem. These impacts were estimated for students in Cohorts 1 and 2 who were randomly assigned to Get Fit by comparing baseline measures collected in the fall of the year sites began implementing Healthy Harlem with followup measures collected two and three years later. In all cases, students were randomly assigned to Get Fit during their baseline year, but may not have received Get Fit in subsequent years.

### A. One-year impacts of Get Fit

One-year impacts of Get Fit were estimated for Cohorts 1 and 2 by comparing fall-to-spring changes for the intervention group to fall-to-spring changes for the control group. The difference between these two changes, or the difference-in-differences, is a measure of the impact of Get Fit over one year. The figures in this section present the fall-to-spring changes for the intervention and control groups; values of the outcome measures in fall and spring are presented in Appendix B.

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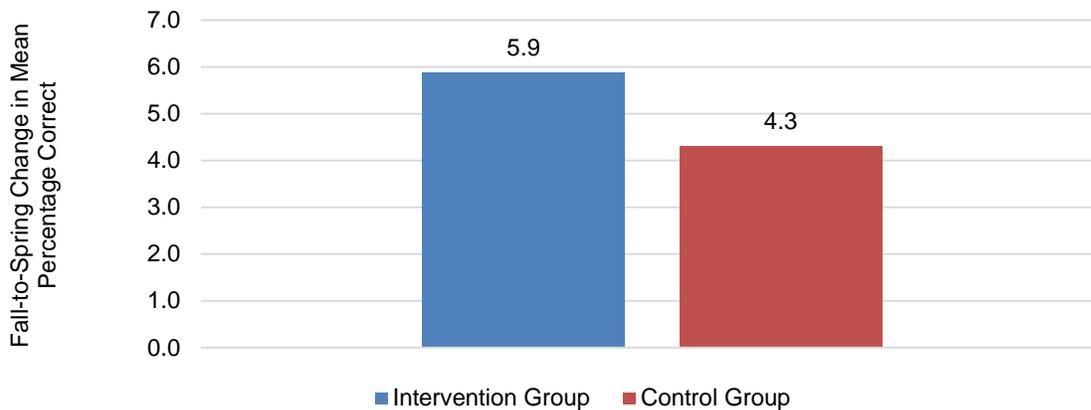
<sup>7</sup> We also estimated impacts for each cohort separately. The one-year impacts of Get Fit for cohort 1 were similar to those presented for the combined cohorts; however, there were no significant one-year impacts for students in cohort 2. Two- and three-year impacts of Get Fit plus Prevention for each cohort were similar to those presented for the combined cohorts.

<sup>8</sup> In Cohort 3, the number of students eligible for Get Fit was too small to use the random assignment design.

## 1. Nutrition-related knowledge and attitudes

Over one year, nutrition knowledge increased for the intervention and control groups. The mean percentage of nutrition knowledge items that students answered correctly increased by 5.9 percentage points for those in the intervention group and by 4.3 percentage points for students in the control group (Figure IV.1). The difference between these two changes was not statistically significant.

**Figure IV.1. Fall-to-spring change in mean percentage of nutrition knowledge items answered correctly**

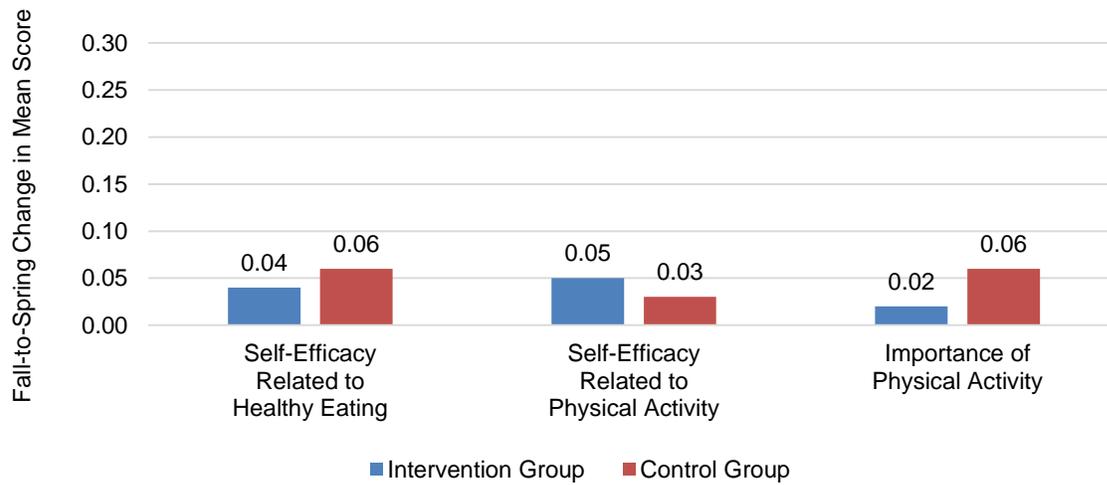


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: The difference between the intervention and control groups was not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 253 students attending sites in Cohorts 1 and 2.

There were no statistically significant impacts of Get Fit on students' attitudes toward healthy eating and physical activity. Although these measures improved for students in the intervention group, the changes were not significantly different from the improvements experienced by students in the control group (Figure IV.2).

**Figure IV.2. Fall-to-spring changes in mean scores for attitudes toward healthy eating and physical activity**



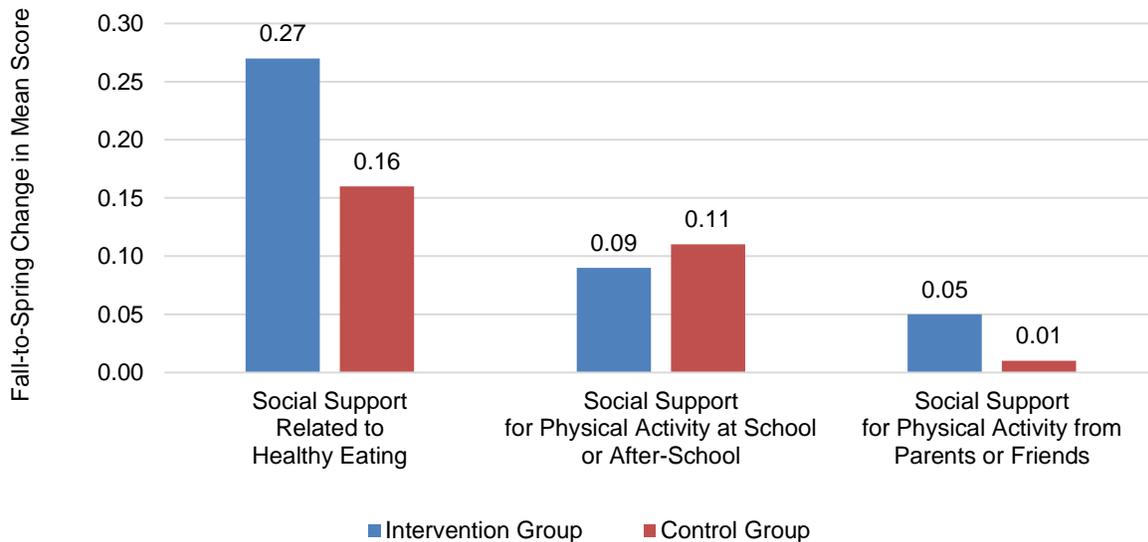
Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: The differences between the intervention and control groups were not statistically significant at the 0.05 level for any outcome. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates for self-efficacy related to healthy eating, self-efficacy related to physical activity, and importance of physical activity are based on 268, 272, and 272 students, respectively, attending sites in Cohorts 1 and 2.

## 2. Perceived social support for healthy eating and physical activity

Get Fit did not have a statistically significant impact on any of the measures of perceived social support (Figure IV.3). For both the intervention and control groups, mean scores for all measures increased from fall to spring. However, none of the differences between intervention and control group changes were statistically significant.

**Figure IV.3. Fall-to-spring changes in mean scores for perceived social support for healthy eating and physical activity**

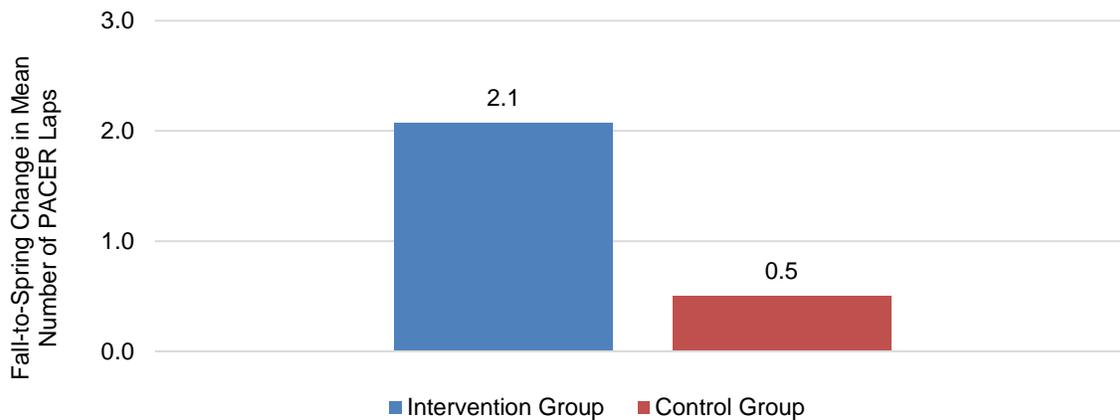


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: The differences between the intervention and control groups were not statistically significant at the 0.05 level for any outcome. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates for social support related to healthy eating, social support for physical activity at school and after-school programming, and social support for physical activity from parents or friends are based on 263, 273, and 271 students, respectively, attending sites in Cohorts 1 and 2.

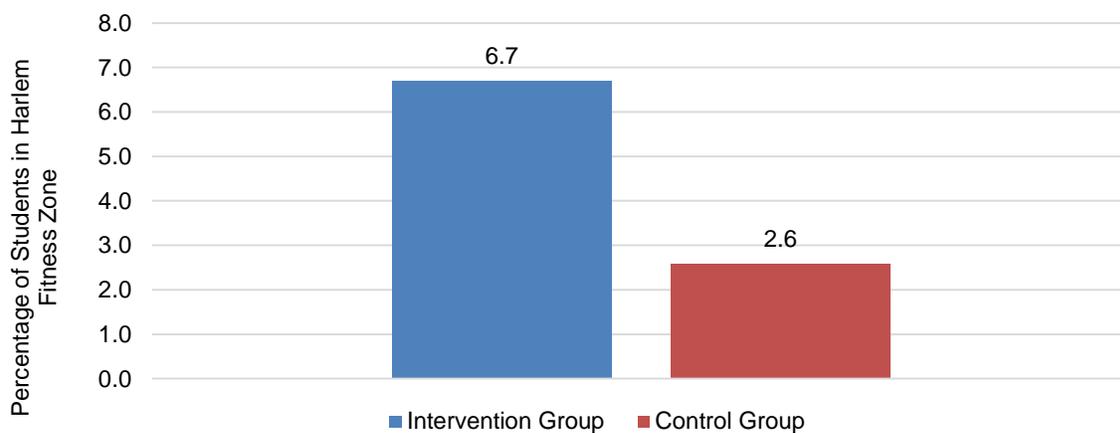
### 3. Fitness

There were no statistically significant impacts of Get Fit on either measure of students' fitness—the mean number of PACER laps or the percentage of students in the Harlem Fitness Zone. The mean number of PACER laps increased for intervention group students by more than three times the increase for control group students (2.1 versus 0.5 laps), but the difference was not statistically significant at the 0.05 level (Figure IV.4). Similarly, the percentage of students in the Harlem Fitness Zone increased by 6.7 percentage points for students in the intervention group, compared with 2.6 percentage points for students in the control group, but the difference was not statistically significant at the 0.05 level (Figure IV.5).

**Figure IV.4. Fall-to-spring change in mean number of PACER laps**

Source: Healthy Harlem evaluation, 2012–2015, PACER fitness test.

Note: The difference between the intervention and control group was not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 274 students attending sites in Cohorts 1 and 2.

**Figure IV.5. Fall-to-spring change in percentage of students in the Harlem Fitness Zone**

Source: Healthy Harlem evaluation, 2012–2015, PACER fitness test.

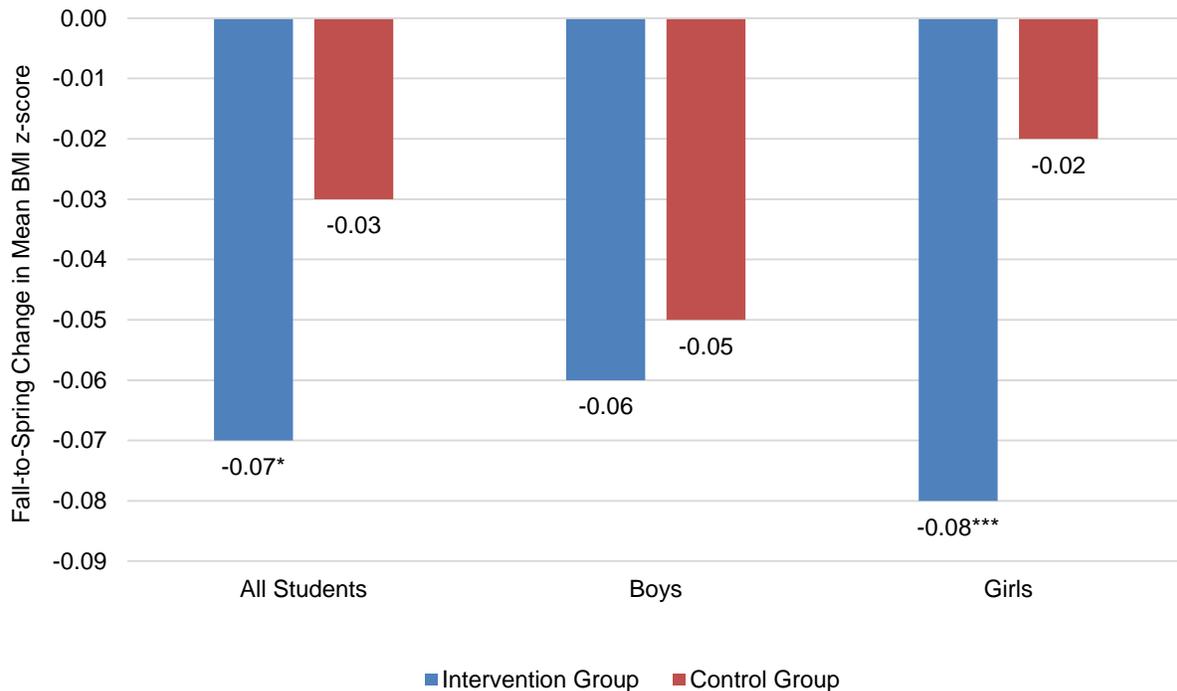
Note: The difference between the intervention and control group was not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 274 students attending sites in Cohorts 1 and 2.

#### 4. Body Mass Index

Get Fit had a positive impact on students' weight status. The mean BMI  $z$ -score decreased for both the intervention and control groups; but the decrease for the intervention group was more than twice the size of the decrease for the control group (-0.07 versus -0.03), and this difference was statistically significant (Figure IV.6). This is a positive finding, indicating that, as a group, students in the intervention group reduced their BMIs more than students in the control

group. The difference between the intervention and control group largely reflected a difference among girls. The statistically significant reduction in BMI  $z$ -scores for girls was much larger for students in the intervention group than those in the control group (-0.08 versus -0.02); there was no statistically significant difference in mean BMI  $z$ -scores for boys.

**Figure IV.6. Fall-to-spring change in mean BMI  $z$ -score**



Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

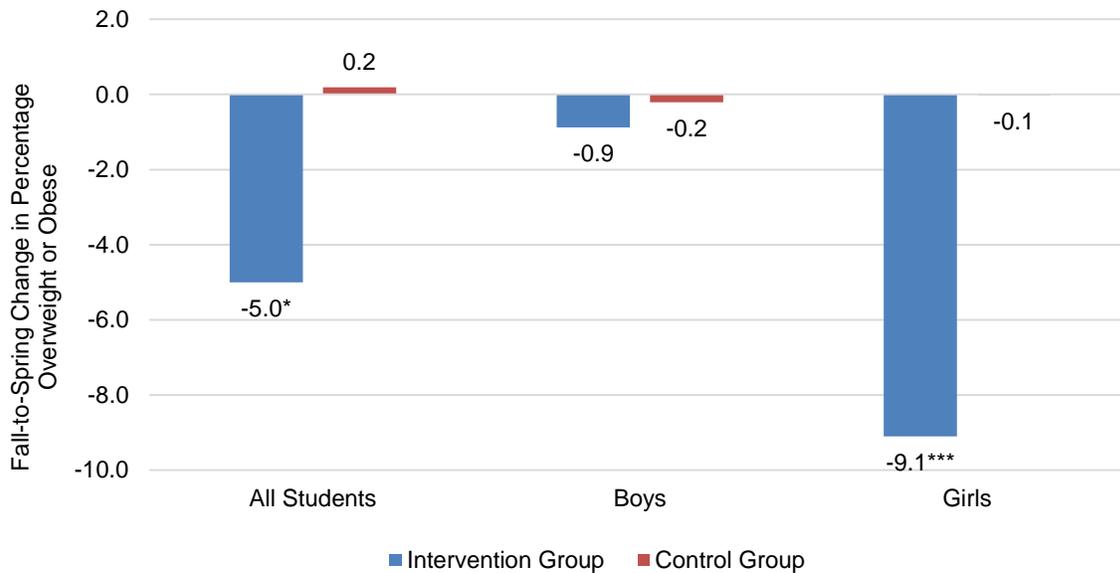
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 233 students attending sites in Cohorts 1 and 2.

\* Difference between intervention and control groups is statistically significant at the  $p < 0.05$  level, two-tailed test.

\*\*\* Difference between intervention and control groups is statistically significant at the  $p < 0.001$  level, two-tailed test.

Get Fit also decreased the percentage of students who were overweight or obese. In the intervention group, the percentage of students who were overweight or obese decreased by 5.0 percentage points, compared to a small increase of 0.2 percentage points for the control group (Figure IV.7). Like the decrease in mean BMI  $z$ -scores, an impact among girls largely drove the decrease in the percentage of overweight or obese students. The percentage of girls in the intervention group who were overweight or obese decreased by 9.1 percentage points, compared with 0.1 percentage points for girls in the control group. Among boys, the percentage of students who were overweight or obese decreased only slightly in both intervention and control groups, and the difference in the change for the two groups was not statistically significant.

**Figure IV.7. One-year impact of Get Fit on percentage of students who were overweight or obese**



Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

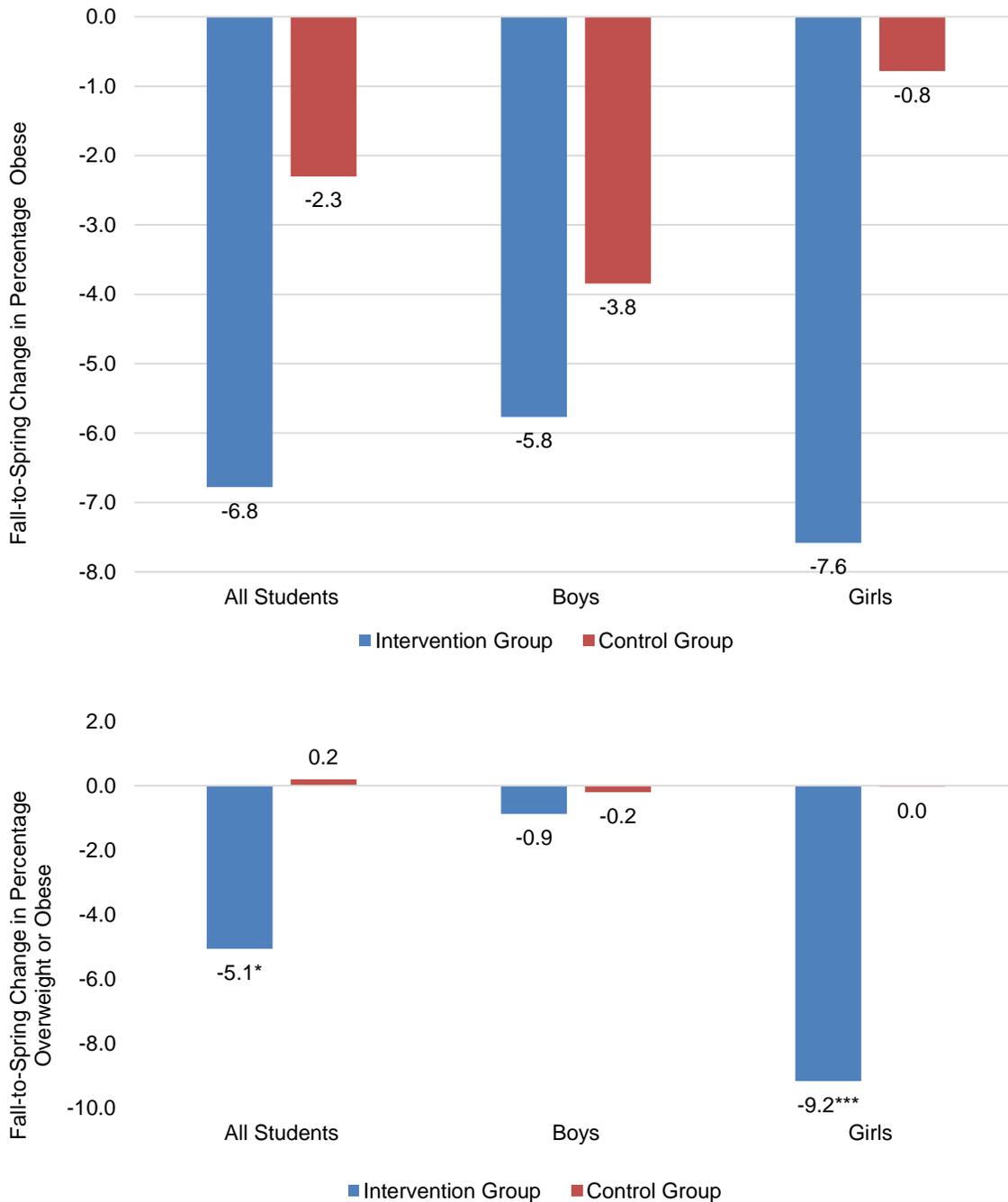
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 233 students attending sites in Cohorts 1 and 2.

\* Difference between intervention and control groups is statistically significant at the  $p < 0.05$  level, two-tailed test.

\*\*\* Difference between intervention and control groups is statistically significant at the  $p < 0.001$  level, two-tailed test.

Get Fit did not have a significant impact on the percentage of students who were obese. In the intervention group, the percentage of students who were obese decreased by 6.8 percentage points, compared to a decrease of 2.3 percentage points for the control group (Figure IV.8), but the difference between the groups was not statistically significant. The percentages of boys and girls in the intervention group who were obese also decreased by more than the percentages of boys and girls in the control group, but these differences were not statistically significant.

**Figure IV.8. One-year impact of Get Fit on percentage of students who were obese**



Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Note: The difference between the intervention and control group was not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates are based on 233 students attending sites in Cohorts 1 and 2.

## **B. Two- and three-year impacts of Get Fit and Prevention**

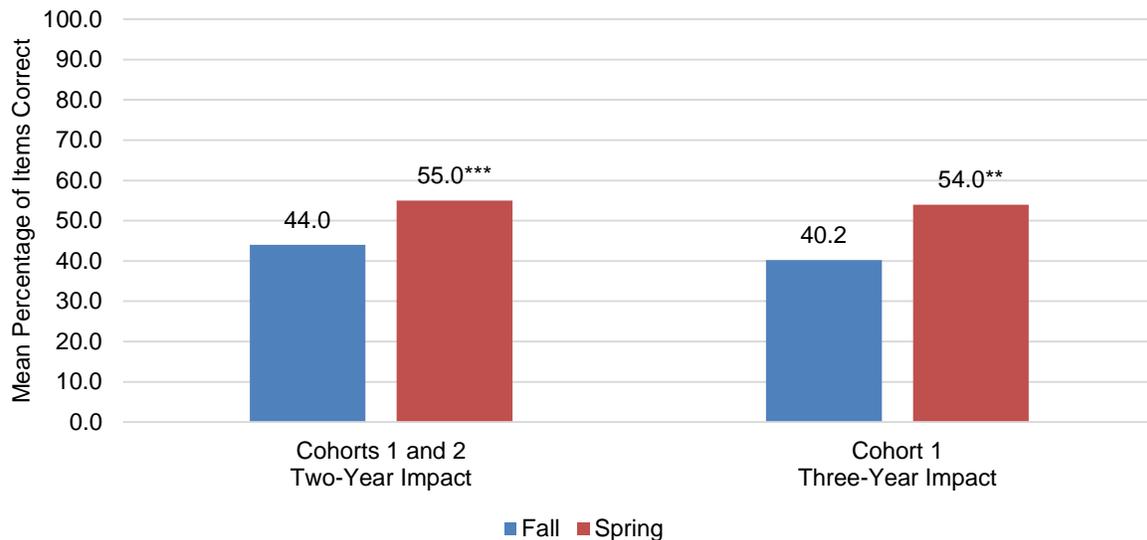
As described in Chapter II, we could not estimate longer-term impacts of Get Fit because of HCZ's interest in ensuring that all eligible students had access to Get Fit at some point. Students assigned to the control group in one year were offered Get Fit the following school year, meaning that the control group was not maintained beyond the first year of Healthy Harlem implementation.

For this reason, estimates of longer-term impacts reflect the combined impact of Get Fit and Prevention. We estimated longer-term impacts for students in Cohorts 1 and 2 who were randomly assigned to Get Fit by comparing baseline measures collected in the fall of the year sites began implementing Healthy Harlem with follow-up measures collected two and three years later. Two-year impacts are available for Cohorts 1 and 2 and three-year impacts are available for Cohort 1. In all cases, students were randomly assigned to Get Fit during their baseline year, but might not have received Get Fit in subsequent years.

### **1. Knowledge and attitudes**

The combination of Get Fit and Prevention increased students' nutrition knowledge over two and three years. The mean percentage of nutrition knowledge items that students answered correctly increased by 11.0 percentage points over two years for students in Cohorts 1 and 2 (from 44.0 to 55.0 percent), and by 13.8 percent points over three years for students in Cohort 1, (from 40.2 to 54.0 percent) (Figure IV.9). Although the two-year impact was similar for boys and girls (a 12.5 and 9.2 percentage point increase, respectively), there was an impact over three years only for boys (24.7 percentage points); there was no statistically significant impact over three years for girls (not shown in figure).

**Figure IV.9. Impact of Get Fit and Prevention on mean percentage of nutrition knowledge items answered correctly**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

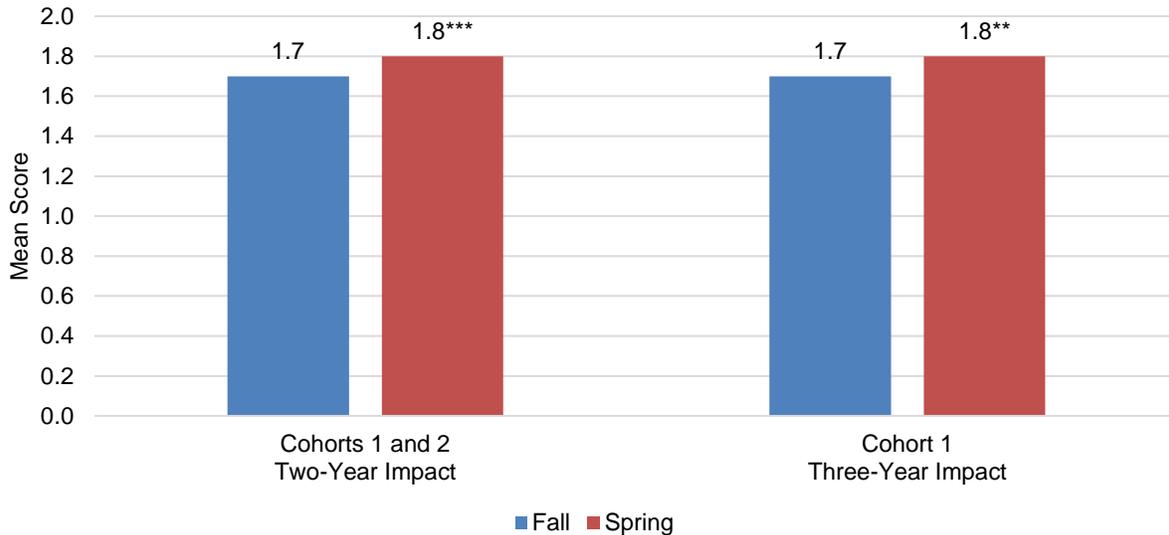
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 366 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 212 students attending sites in Cohort 1.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

The findings were mixed related to changes in students' attitudes toward healthy eating and physical activity. Get Fit and Prevention increased students' mean score for self-efficacy related to physical activity over two and three years from 1.7 to 1.8 (Figure IV.10). However, there were no statistically significant changes in self-efficacy related to healthy eating (Figure IV.11) or in students' perceptions about the importance of physical activity (Figure IV.12).

**Figure IV.10. Impact of Get Fit and Prevention on mean score for self-efficacy related to physical activity**



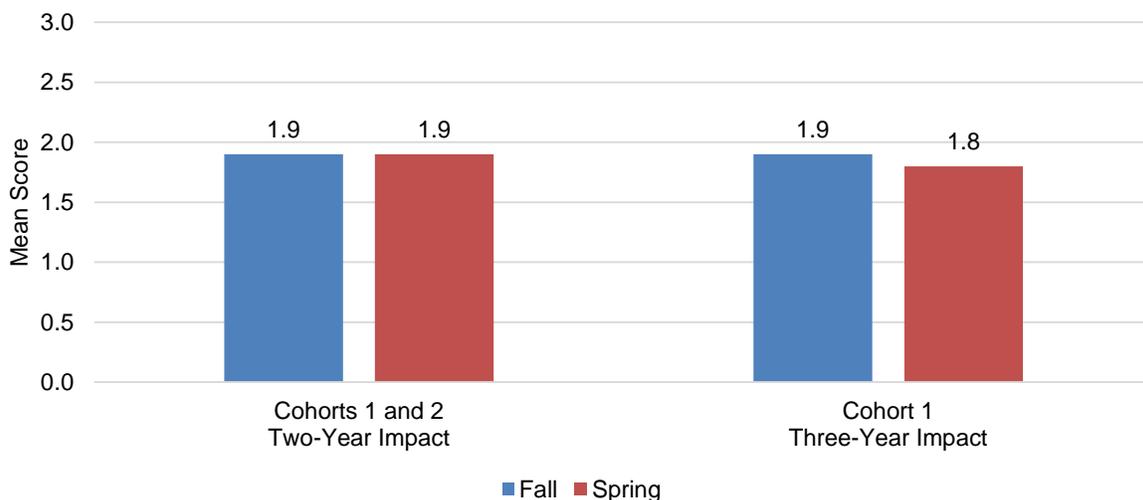
Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 396 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 226 students attending sites in Cohort 1.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.11. Impact of Get Fit and Prevention on mean score for self-efficacy related to healthy eating**

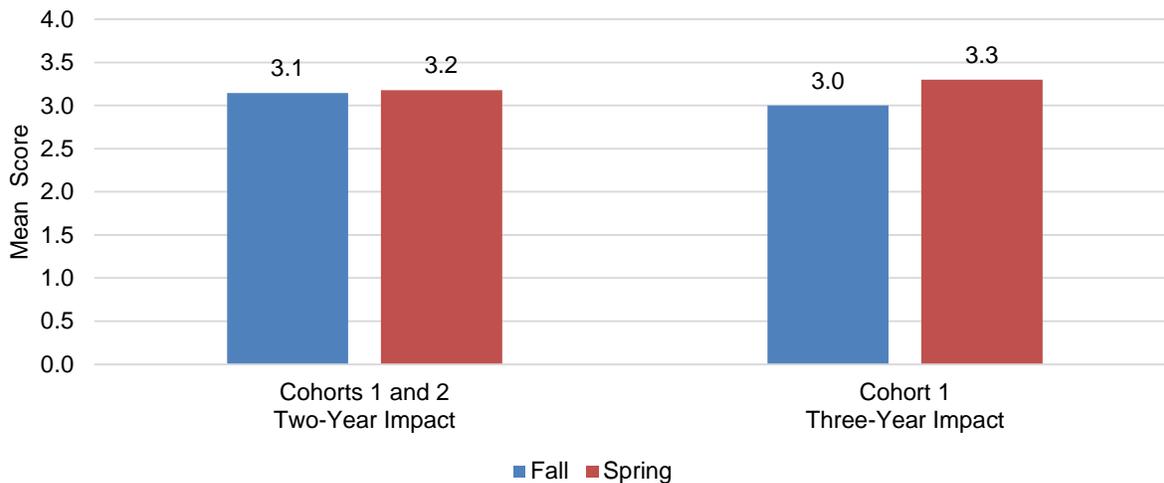


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 390 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 222 students attending sites in Cohort 1.

Differences between fall and spring were not statistically significant at the  $p < 0.05$  level, two-tailed test.

**Figure IV.12. Impact of Get Fit and Prevention on mean score for perceived importance of physical activity**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

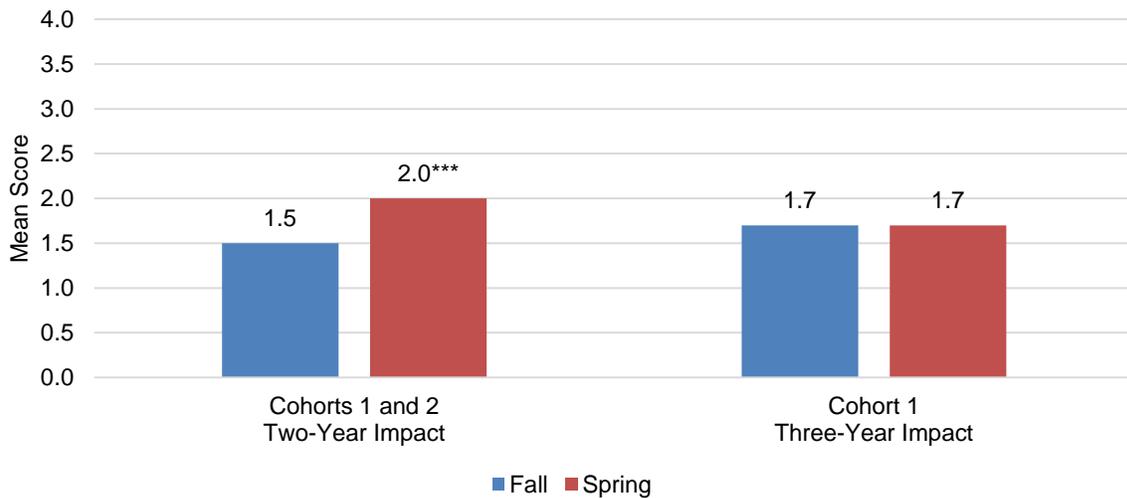
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 396 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 222 students attending sites in Cohort 1.

Differences between fall and spring were not statistically significant at the  $p < 0.05$  level, two-tailed test.

## 2. Perceived social support for healthy eating and physical activity

Findings related to students' perceived social support for healthy eating and physical activity were also mixed. Get Fit and Prevention increased students' perceived social support for healthy eating and physical activity from parents or friends over two years, but not over three years (Figures IV.13 and IV.14). The mean score for social support for healthy eating increased over two years from 1.5 to 2.0, and the mean score for social support for physical activity from parents or friends increased from 1.7 to 1.8. There were no statistically significant changes in students' perceived social support for physical activity at school and after-school programming over two or three years (Figure IV.15).

**Figure IV.13. Impact of Get Fit and Prevention on mean score for perceived social support for healthy eating**

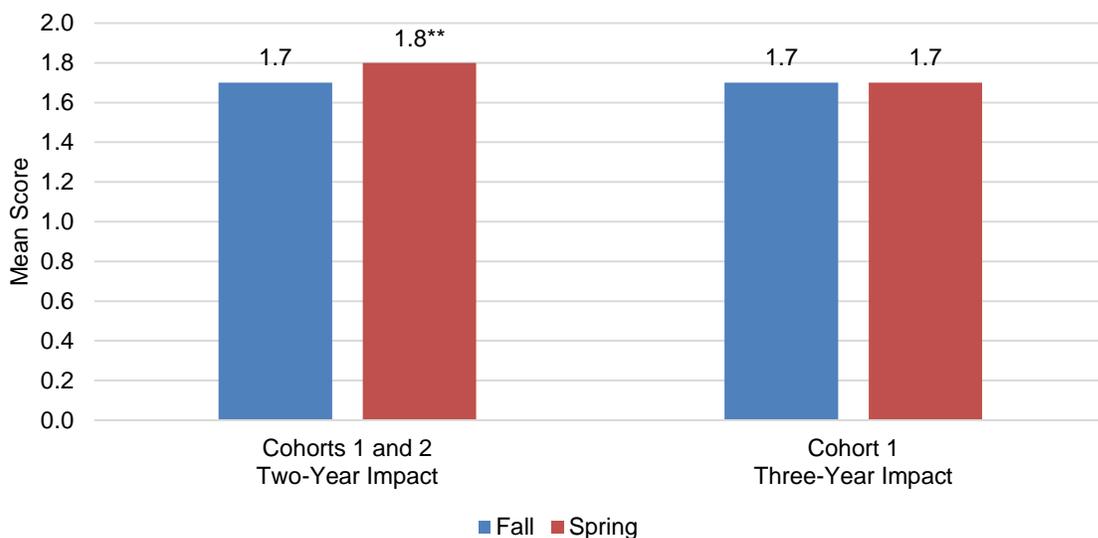


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 382 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 218 students attending sites in Cohort 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.14. Impact of Get Fit and Prevention on mean score for perceived social support for physical activity from parents or friends**

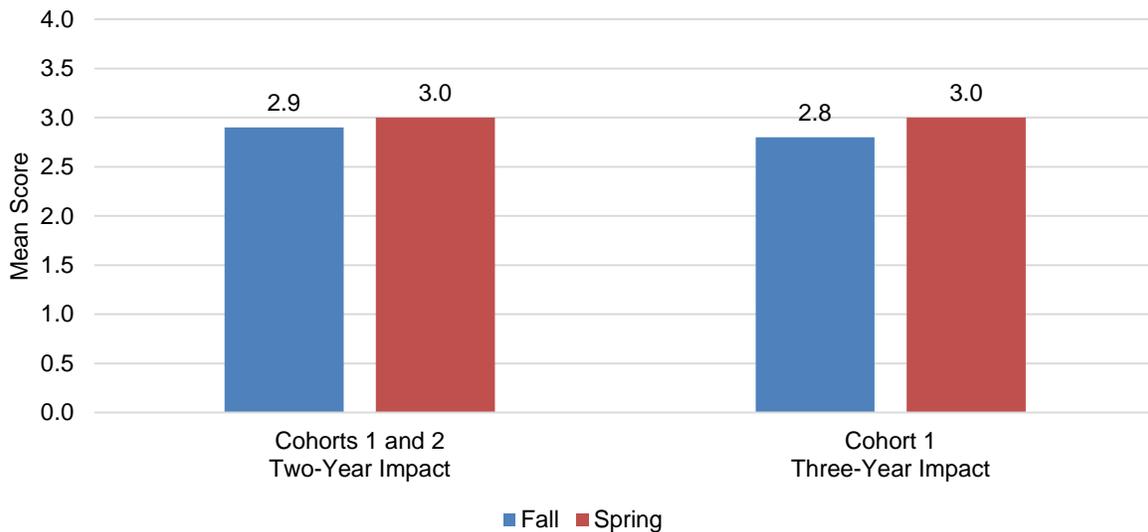


Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 394 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 224 students attending sites in Cohort 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.15. Impact of Get Fit and Prevention on mean scores for perceived social support for physical activity at school and after-school programming**



Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 396 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 226 students attending sites in Cohort 1.

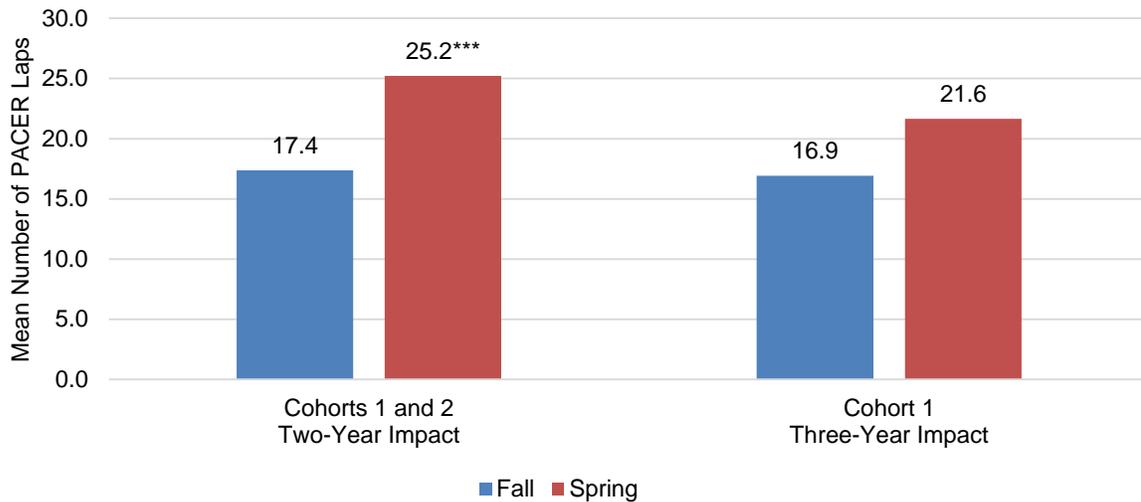
Differences between fall and spring were not statistically significant at the  $p < 0.05$  level, two-tailed test.

### 3. Fitness

Get Fit and Prevention increased both measures of students' fitness over two years. There were increases in both measures over three years, but they were not statistically significant. The three-year impacts differed by gender, however, with large, statistically significant impacts for boys, but not girls.

Get Fit and Prevention increased the mean number of PACER laps by 7.8 laps, from 17.4 to 25.2 laps over two years (Figure IV.16). The mean number of laps increased by 10.6 laps for boys and 7.4 laps for girls (not shown in figure). Although the mean number of PACER laps increased over three years for all students, from 16.9 to 21.6 laps, the change was not statistically significant (Figure IV.16). The mean number of PACER laps increased over three years for boys from 20.8 to 31.6 laps, but there was no significant increase for girls (Figure IV.17).

**Figure IV.16. Impact of Get Fit and Prevention on mean number of PACER laps**

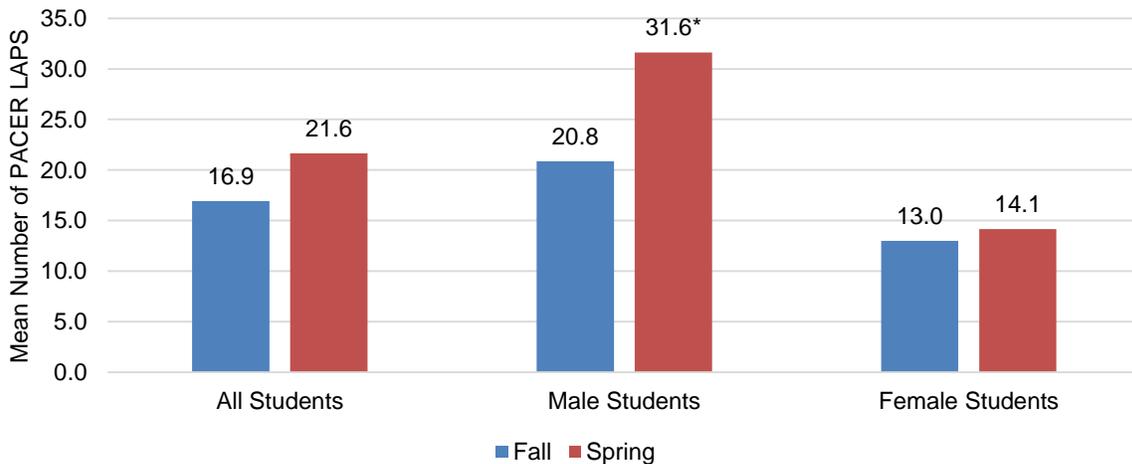


Source: Healthy Harlem evaluation, 2012–2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 408 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 228 students attending sites in Cohort 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.17. Three-year impact of Get Fit and Prevention on mean number of PACER laps, by gender**



Source: Healthy Harlem evaluation, 2012–2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

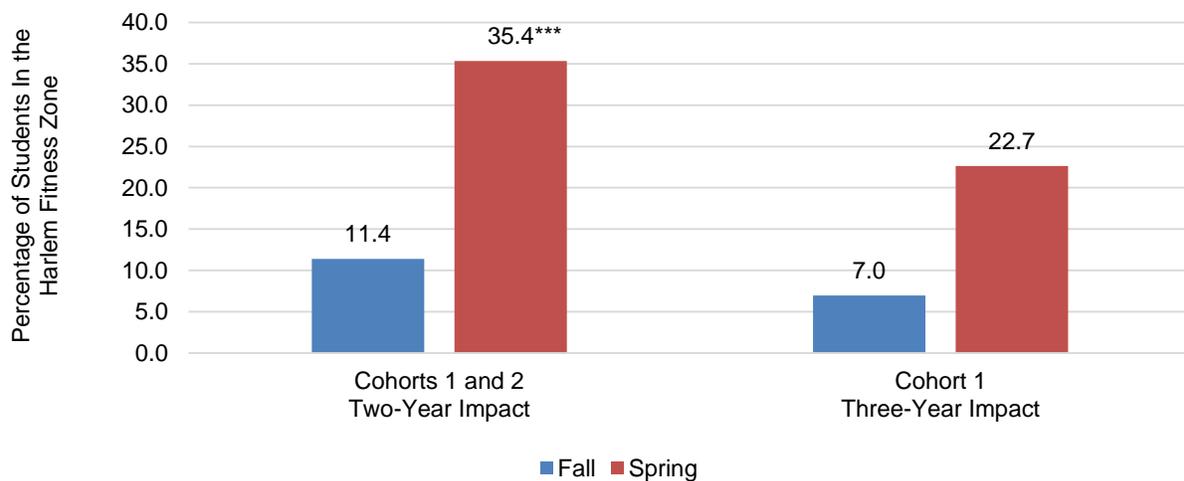
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Three-year estimates are based on 228 students attending sites in Cohorts 1.

\* Difference between fall and spring is statistically significant at the  $p < 0.05$  level, two-tailed test.

Get Fit and Prevention also increased the percentage of students in the Harlem Fitness Zone over two years by 24 percentage points, from 11.4 to 35.4 percent (Figure IV.18). The percentage of students in the Harlem Fitness Zone increased by 27.1 percentage points for boys and 23.8 percentage points for girls (not shown in figure).

Over three years, the percentage of students in the Harlem Fitness Zone increased from 7.0 to 22.7 percent; however, this change was not statistically significant (Figure IV.18). Consistent with the differences observed for boys and girls in the mean number of PACER laps, the percentage of boys in the Harlem Fitness Zone increased over three years, from 8.0 to 35.6 percent, but there was no significant increase for girls (Figure IV.19).

**Figure IV.18. Impact of Get Fit and Prevention on percentage of students in the Harlem Fitness Zone**

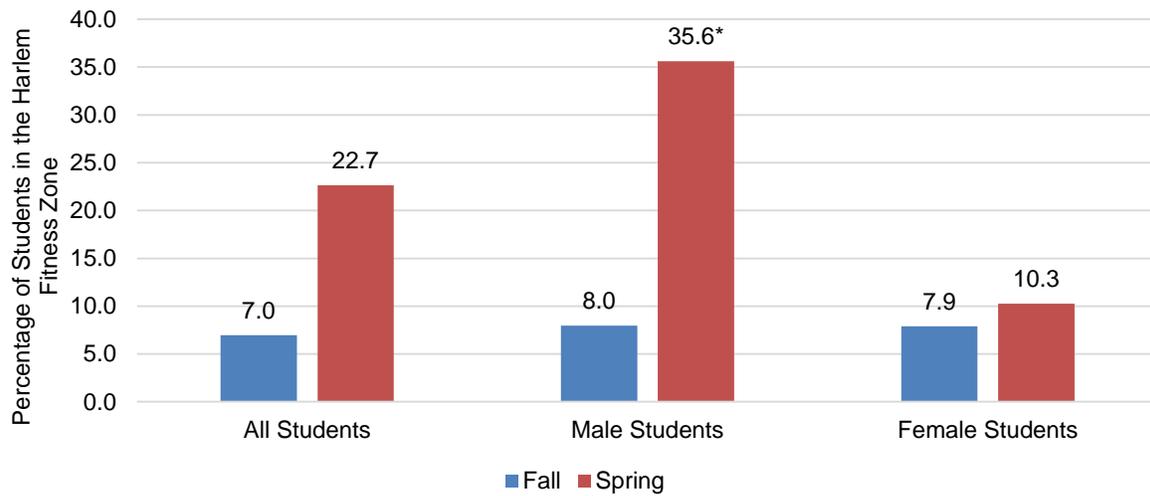


Source: Healthy Harlem evaluation, 2012–2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 408 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 228 students attending sites in Cohorts 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.19. Three-year impact of Get Fit and Prevention on percentage of students in the Harlem Fitness Zone, by gender**



Source: Healthy Harlem evaluation, 2012–2015, PACER (Progressive Aerobic Cardiovascular Endurance Run) fitness test.

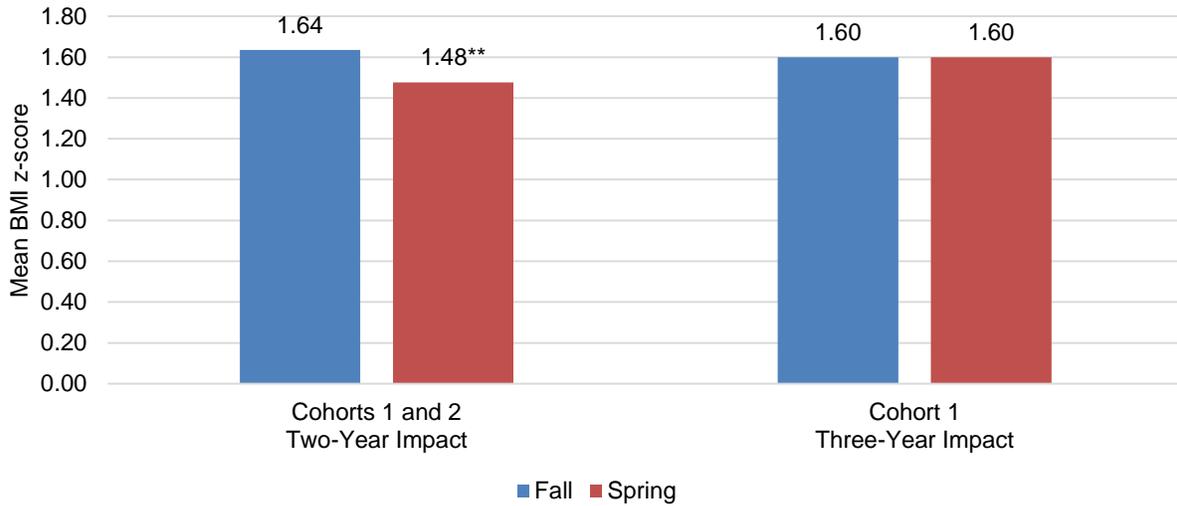
Note: Estimates were regression adjusted for students' gender, age, grade, and site. Three-year estimates are based on 408 students attending sites in Cohorts 1.

\* Difference between fall and spring is statistically significant at the  $p < 0.05$  level, two-tailed test.

#### 4. Body Mass Index

Get Fit and Prevention had a positive impact on students' BMIs over two years, with the mean BMI  $z$ -score decreasing from 1.64 to 1.48; however, there was no statistically significant change over three years (Figure IV.20). The findings were similar for boys and girls considered separately (not shown in figure).

**Figure IV.20. Two- and three-year impact of Get Fit and Prevention on mean BMI z-score**



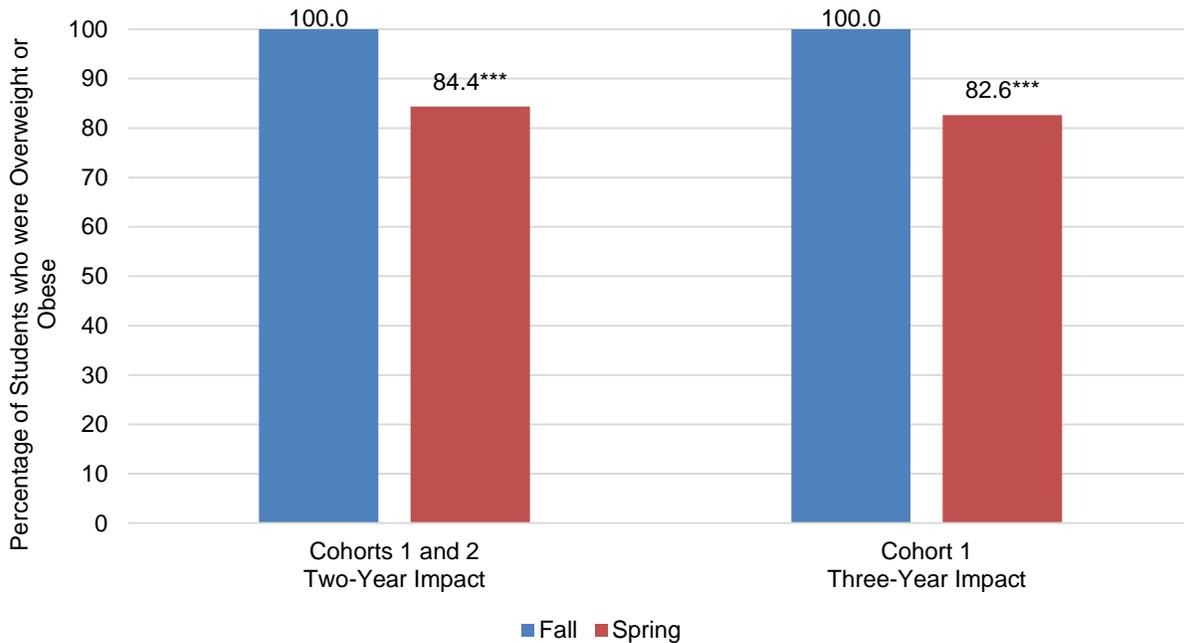
Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 316 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 176 students attending sites in Cohort 1.

\*\* Difference between fall and spring is statistically significant at the  $p < 0.01$  level, two-tailed test.

Get Fit and Prevention decreased the percentage of students who were overweight or obese by 16 to 17 percentage points over two and three years. The percentage decreased from 100.0 to 84.4 percent over two years and from 100.0 to 82.6 percent over three years (Figure IV.21).

**Figure IV.21. Impact of Get Fit and Prevention on percentage of students who were overweight or obese**



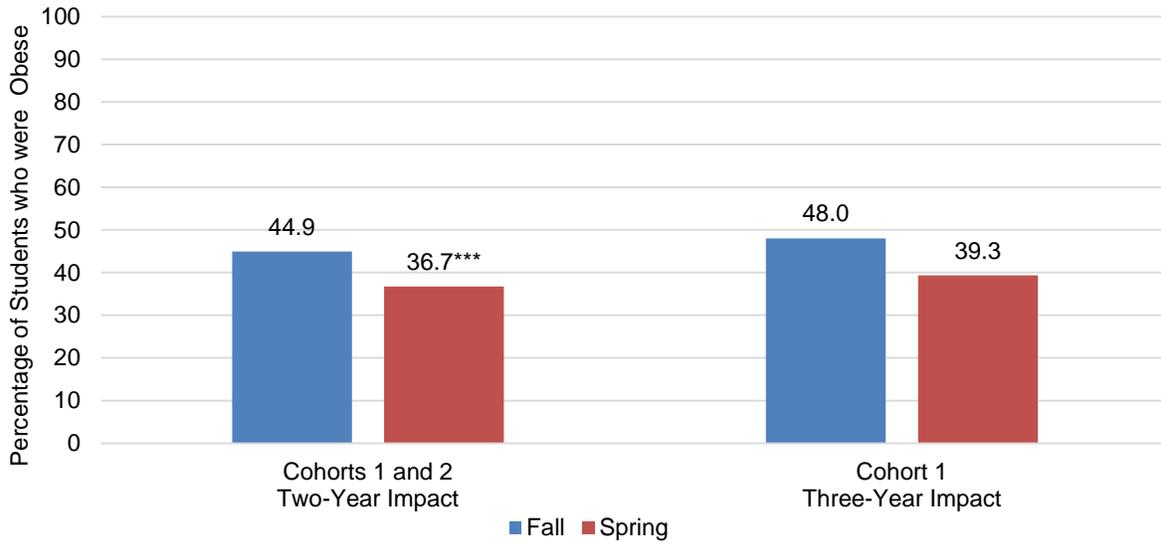
Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 316 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 176 students attending sites in Cohort 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

In addition to examining impacts on the percentage of students who were overweight or obese, we examined impacts on the percentage who were obese. Get Fit and Prevention decreased the percentage of students who were obese over two years by 8.2 percentage points, from 44.9 to 36.7 percent (Figure IV.22). Although the reduction over three years was similar in magnitude, it was not statistically significant. Exploring whether there were differences in three-year impacts by gender showed that Get Fit and Prevention decreased the percentage of students who were obese over three years for boys by 16.2 percentage points, from 54.5 to 38.3 percent, but there was no significant decrease for girls (Figure IV.23).

**Figure IV.22. Impact of Get Fit and Prevention on percentage of students who were obese**

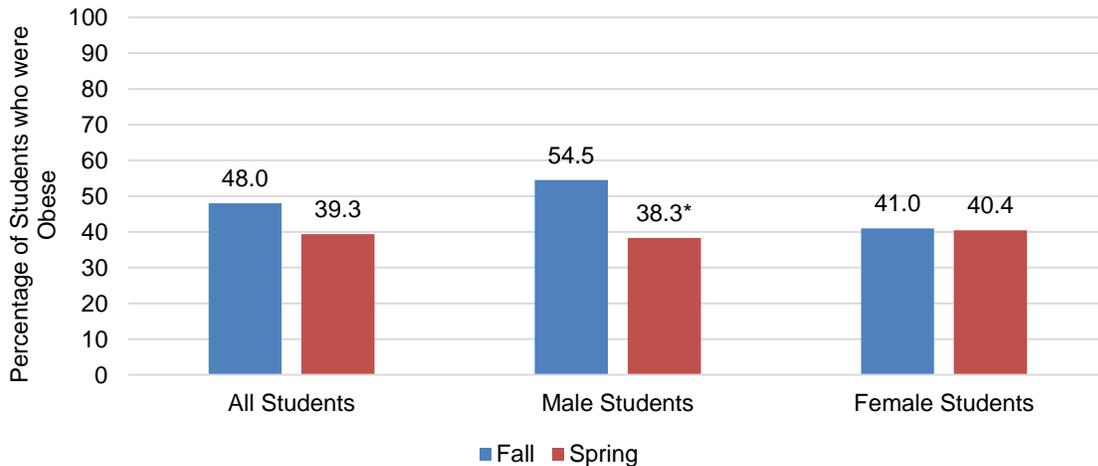


Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Two-year estimates are based on 316 students attending sites in Cohorts 1 and 2. Three-year estimates are based on 176 students attending sites in Cohorts 1.

\*\*\* Difference between fall and spring is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Figure IV.23. Three-year impact of Get Fit and Prevention on percentage of students who were obese, by gender**



Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. Three-year estimates are based on 176 students attending sites in Cohorts 1.

\* Difference between fall and spring is statistically significant at the  $p < 0.05$  level, two-tailed test.

## V. CONCLUSIONS

The main objective of this study was to assess the impact of Healthy Harlem on the prevalence of overweight and obesity among HCZ students, and on key dimensions that may contribute to this problem. Specifically, the study examined impacts on students' nutrition-related knowledge and attitudes, perceived social support for healthy eating and physical activity, fitness, and BMI. The findings provide strong evidence that in its first three years of implementation, Healthy Harlem has accomplished its main goal of promoting healthy lifestyles among HCZ students.

This chapter summarizes key findings for each program component and set of outcomes. A subsequent section presents possible implications for further program development.

### A. Key findings

Healthy Harlem had differential impacts on students' health and behaviors over time, depending on the program component(s) in which they participated (Table V.1).

**Table V.1. Summary of impacts of Prevention, Get Fit, and Get Fit plus Prevention on students' outcomes**

Domains and outcomes	Prevention			Get Fit <sup>a</sup>		Get Fit plus Prevention
	One-year impact	Two-year impact	Three-year impact	One-year impact	Two-year impact	Three-year impact
<b>Nutrition knowledge and attitudes</b>						
Nutrition knowledge	+	+	+	0	+	+
Self-efficacy related to physical activity	+	+	+	0	+	+
Self-efficacy related to healthy eating	-	0	0	0	0	0
Importance of physical activity	0	-	0	0	0	0
<b>Perceived social support for healthy eating and physical activity</b>						
Social support for healthy eating	+	+	0	0	+	0
Social support for physical activity from parents or friends	+	0	0	0	+	0
Social support for physical activity at school and after-school programming	+	+	0	0	0	0
<b>Fitness</b>						
PACER	+	+	0	0	+	0
Harlem Fitness Zone	+	+	0	0	+	0
<b>BMI</b>						
BMI z-score	0	0	0	+	+	0
Percentage of students overweight or obese	n.a.	n.a.	n.a.	+	+	+
Percentage of students obese	n.a.	n.a.	n.a.	0	+	0

Sources: Healthy Harlem evaluation, 2012–2015, student survey, PACER fitness test, and height and weight measurements.

Note: + indicates an improvement in the outcome, - indicates a worsening in the outcome, and 0 indicates no change in the outcome.

<sup>a</sup> Get Fit students also participated in Prevention, but the one-year impacts in this column measured the impacts of Get Fit separately from Prevention.

n.a. = not applicable.

## 1. Impacts of the Prevention component

For students who participated only in the Prevention component, measures of nutrition-related knowledge and attitudes and perceived social support for healthy eating and physical activity generally improved. Many outcomes within these domains improved, although some stayed the same and only a few decreased (the changes for outcomes that decreased were very small and were not substantively meaningful). Several outcomes, including nutrition knowledge and self-efficacy related to physical activity, showed improvements that were sustained each year for three years. Fitness also improved over one and two years. Overall, there were no statistically significant changes in students' BMIs. This is not an unexpected finding, given that nearly all of the students who participated only in the Prevention component of Healthy Harlem had healthy weights at the start of the program. There were, however, positive impacts for girls over one and two years, with the mean BMI  $z$ -score decreasing by about 0.1 over one year and 0.2 over two years. There were no similar impacts for boys.

## 2. Impacts of Get Fit

We assessed one-year impacts of the Get Fit component using a random assignment design in which students assigned to the intervention group participated in Get Fit and those assigned to the control group did not. The difference between the two groups provided an estimate of the one-year impact of Get Fit. According to these findings, Get Fit did not change students' nutrition-related knowledge and attitudes, perceived social support, or fitness. This suggests that Get Fit had no incremental impact on these outcomes, beyond the impact of the Prevention component in which all students participated.

In contrast, Get Fit did have a significant impact on students' BMI  $z$ -scores over one year, with students in the intervention group reducing their BMI  $z$ -scores more than students in the control group. In addition, the percentage of students who were overweight or obese decreased significantly more for the intervention group than the control group. This is consistent with the fact that Get Fit specifically targeted students who were overweight or obese and worked with them to set and monitor goals to promote healthful eating and physical activity and produce healthy weight loss. Separate findings for boys and girls show that Get Fit had a very large impact over one year on BMI for girls, but no impact for boys. Improvements in BMI  $z$ -scores and the percentage of students who were overweight or obese were eight to nine times larger for girls in the intervention group than for those in the control group.

## 3. Impacts of Get Fit and Prevention

Because Get Fit was made available to all eligible students after the first year of implementation, it was not possible to maintain the random assignment design and measure longer-term impacts of Get Fit separately from the impacts of the Prevention component. Instead, longer-term impacts examine the combined effect of participation in both Get Fit and the Prevention component of Healthy Harlem. Students receiving both Get Fit and Prevention improved substantially over two and three years in outcomes across all four domains. Get Fit and Prevention generally improved students' nutrition knowledge and attitudes, perceived social support for healthy eating and physical activity, fitness, and BMI over two years. Students sustained those improvements over three years for nutrition knowledge and attitudes toward healthy eating and physical activity, as well as for BMI.

Although there were impacts of Get Fit and Prevention (considered together) on all measures of fitness and BMI over two years, there were fewer impacts over three years. Assessing the three-year impacts by gender revealed that boys experienced sizable improvements in fitness and BMI over three years, but girls did not experience any change. Get Fit and Prevention increased the average number of PACER laps by 50 percent for boys and increased the percentage of boys in the Harlem Fitness Zone almost four-fold. Get Fit and Prevention also reduced the percentage of boys who were obese by 30 percent.

## **B. Implications for program development**

These findings suggest several possible areas for additional program development:

- **Making Healthy Harlem physical activities more attractive to girls.** There were notable differences in longer-term impacts of Get Fit and Prevention between boys and girls. For instance, Get Fit plus Prevention led to increases in the percentage of boys in the Harlem Fitness Zone after two and three years, but did not have a similar impact for girls. Discussions with Healthy Harlem staff and students have suggested that gender differences in program use over two and three years might explain these differences. For example, focus groups with Healthy Harlem students, conducted near the end of the third year of implementation, suggested that the competitive physical activities routinely offered in the Get Fit and Prevention programs were more attractive to boys than girls. In addition, girls mentioned experiencing barriers to physical activity that might not be as prevalent among boys, such as wanting to avoid getting sweaty and messing up their hair and feeling self-conscious about being physically active in front of peers. As a result, boys could be more likely to participate in Healthy Harlem physical activities, develop physical stamina, and improve their performance on the PACER test over time.
- **Improving nutrition knowledge.** Nutrition knowledge scores increased among students receiving the Prevention component over one, two, and three years and increased for students who received Get Fit and Prevention components together over two and three years. Furthermore, the improvements grew over time: students who received the Prevention component experienced increases in the percentage of correct nutrition knowledge items of 5 percentage points over one year, 10 percentage points over two years, and 14 percentage points over three years. Students who received Get Fit and Prevention had improvements of 11 and 14 percentage points over two and three years. Even though these are large changes, the average percentage of nutrition knowledge questions answered correctly after receiving Healthy Harlem was about 55 percent. We shared with HCZ the specifics about which questions students tended to answer incorrectly. Healthy Harlem staff are now independently tracking students' performance on the nutrition knowledge questions, with the aim of identifying best practices for improving scores and will share those practices across sites.
- **Improving self-efficacy for healthy eating.** Children's reports of self-efficacy related to healthy eating did not improve over the course of the study. In fact, the mean score for self-efficacy related to healthy eating decreased over the first year of implementation. This outcome measure was based on a set of questions that assessed how confident students were in their ability to eat healthfully when eating with family, with friends, at their school, and at their after-school program. During focus groups, Healthy Harlem students suggested that the

snacks and other food choices provided by Healthy Harlem staff and teachers made it difficult for them to eat healthy foods. For example, most students in the focus groups reported that their school teachers often gave them candy and junk food, such as pizza and soda. And although Healthy Harlem staff provide healthy snacks during after-school programming, students wished there was more variety and noted that the quality of snacks had decreased over time. Finally, many students claimed that the taste, cost, and accessibility of unhealthy food relative to healthy food makes it hard for them to consistently eat healthfully. We have shared this information with HCZ staff and they are working to improve access to healthy and tasty food for their students.

- **Improving consistency of Healthy Harlem implementation across sites.** The main focus of the impact evaluation is to measure impacts of the Prevention and Get Fit components across all Healthy Harlem sites and cohorts. However, we can also examine cohort-specific impacts. Although not reported here, cohort-specific impacts were generally consistent with the impacts presented in this report. In a few cases, however, impacts were identified for some cohorts, but not others. For example, the Prevention component increased both measures of students' fitness over one year for students in Cohort 2 and 3 sites (which is consistent with the combined impact for Cohorts 1, 2, and 3), but there was no impact for students in Cohort 1 sites. Using this information after the first year of the evaluation, HCZ was able to make refinements in program implementation for Cohorts 2 and 3. As we obtain additional years of data for each cohort, we will continue to identify any cohort-based differences to highlight potential pathways for program development.

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## **APPENDIX A**

### **DESCRIPTION OF ANALYSIS METHODS**

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## APPENDIX A. DESCRIPTION OF ANALYSIS METHODS

This appendix presents the analysis methods used to estimate the impact of Prevention and Get Fit. It describes the durations over which impacts were measured, the statistical models used to estimate impacts, the estimation of standard errors and application of analysis weights, and the use of multiple comparison adjustments. The appendix concludes by discussing how we formed the analysis samples to measure the impact of each program component.

### A. Estimating the impact of Prevention

To assess the impact of the Prevention component we used a pre-post approach, which compared outcomes measured in the fall of a cohort's first year of implementation with outcomes measured the following spring. Table A.1 describes the timing of comparisons for each Cohort. For example, to estimate one-year impacts of Prevention for students in Cohort 1 sites, we compared outcomes measured in fall 2012 with outcomes measured in spring 2013. Similarly, two-year impacts compared outcomes in fall 2012 and spring 2014, and three-year impacts compared outcomes in fall 2012 and spring 2015.

**Table A.1. Timing of pre-post comparisons in Prevention analysis**

	One-year impact	Two-year impact	Three-year impact
Cohort 1	Fall 2012 versus spring 2013	Fall 2012 versus spring 2014	Fall 2012 versus spring 2015
Cohort 2	Fall 2013 versus spring 2014	Fall 2013 versus spring 2015	
Cohort 3	Fall 2014 versus spring 2015		

The study used multivariate regression models that accounted for differences in student and site characteristics to estimate impacts. We used ordinary least squares regression analysis to estimate impacts of Prevention on outcome measures that were continuous variables, which includes all outcomes in the knowledge and attitudes domain, all outcomes in the perceived social support domain, the number of PACER laps, and BMI z-score. We used logistic regression analysis to estimate the impact of Prevention on outcome measures that were binary variables, which includes whether a student was in the Harlem Fitness Zone, whether a student was overweight or obese, and whether a student was obese. The main independent variable was an indicator that the student's outcome was measured in the spring, versus being measured in the fall. The set of other explanatory variables consisted of students' age, grade, gender, and site, which were obtained through administrative data provided by the Harlem Children's Zone (HCZ)<sup>®</sup>.

We used regression-adjusted statistics that resemble descriptive statistics to present the results of the analyses. For example, a regression-adjusted figure compares the percentage of students in the Harlem Fitness Zone in the fall with the percentage of students in the Harlem Fitness Zone in the spring after adjusting for differences across the two groups in students' age, grade, gender, and program site. To examine binary outcome measures using logistic regression analysis, we obtained the regression-adjusted estimates by estimating the regression, using the regression coefficients and variable values for each student in the sample to obtain a predicted probability of being in the Harlem Fitness Zone, and averaging the predicted probabilities to

obtain the adjusted (predicted) percentage of students in the Harlem Fitness Zone. By performing these steps assuming all sample members are in the fall, then repeating the procedure assuming all sample members are in the spring, we obtained two averaged values. The difference between these values is the regression-adjusted estimate of the effect of prevention on the percentage of students in the Harlem Fitness Zone. The procedure is identical for continuous outcome measures, except that we obtained regression-adjusted mean values of the outcomes using ordinary least squares regression.

We estimated standard errors using Stata 14.1's *vce(cluster studentid)* command. This enabled data to be treated as independently distributed among students, but not across fall and spring observations for each student. We then applied a finite population correction (FPC) factor to all standard errors in the Prevention analyses because we obtained data from the population of students in the Harlem Children Zone. The FPC reduced the variance of the impact estimate by 1 minus the ratio of the number of students with valid and nonmissing data to the number of students who were eligible for a specific analysis. We estimated separate FPCs for each cohort and each data source (student survey, fitness data, and BMI data).

Finally, because estimating impacts on more than one outcome or for multiple subgroups increases the likelihood of finding spurious, statistically significant impact estimates if standard statistical tests are applied to each outcome or subgroup, we performed a multiple comparisons adjustment to account for the fact that we conducted multiple hypothesis tests. Following the National Center for Education Evaluation's guidelines (Schochet 2008), we first organized all outcomes into domains based on the underlying concepts measured. The four domains described previously were considered to be the focus of confirmatory analyses for rigorous testing of the study's central hypotheses, whereas outcomes in other domains not presented in this report were included in less rigorous exploratory analyses for examining relationships in the data and identifying hypotheses for future analysis. We used the procedure developed by Benjamini and Hochberg (1995) to adjust for multiple hypothesis testing within each outcome domain for the confirmatory analyses. For the gender subgroup analyses, we adjusted for multiple hypothesis testing within each subgroup by using the Benjamini-Hochberg procedure as well.

## **B. Estimating the impact of Get Fit**

Students with BMI at or above the 85th percentile and less than the 99th percentile were randomly assigned to intervention or control groups during the first year of Healthy Harlem implementation at each site. During this year, students in the control group received Prevention only; students in the intervention group received both Get Fit and Prevention.

We assessed the impact of the Get Fit component using a difference-in-differences regression approach, which compared the average fall-to-spring change in an outcome for the control group (which measures the impact of the Prevention component) with the average fall-to-spring change in an outcome for the intervention group (which measures the impact of both the Prevention and Get Fit components). The impact of Get Fit was measured over a one-year period only. We were unable to estimate longer-term impacts of Get Fit due to the staggered research design in which students in the control group in one year received Get Fit in the subsequent year. For example, for sites in Cohort 1 that implemented Healthy Harlem in the first year of the evaluation corresponding to SY 2012–2013, students who were in the control group in SY 2012–

2013 received Get Fit the following year, provided they remained eligible. Similarly, for Cohort 2 sites that first implemented Healthy Harlem in SY 2013–2014, students who were in the control group in SY 2013–2014 received Get Fit the following year. Lacking a control group of students who did not receive Get Fit for more than one year, we could not isolate the impact of Get Fit over two and three years separate from the impact of Prevention. Thus, in place of assessing the longer-term impacts of Get Fit, based on random assignment, we estimated the impact over two and three years of receiving both Prevention and Get Fit among students who were in the intervention group in the first year. Table A.2 summarizes the analytic approach and time periods used to estimate the one-year impacts of Get Fit and the two- and three-year impacts of Get Fit and Prevention.

**Table A.2. Timing of difference-in-differences comparisons in one-year Get Fit analysis and pre-post comparisons in two- and three-year analysis of Get Fit and Prevention**

	One-year impact of Get Fit	Two-year impact of Prevention and Get Fit	Three-year impact of Get Fit and Prevention
Analytic approach	Difference-in-difference	Pre-post	Pre-post
Cohort 1	Fall 2012 versus Spring 2013	Fall 2012 versus Spring 2014	Fall 2012 versus Spring 2015
Cohort 2	Fall 2013 versus Spring 2014	Fall 2013 versus Spring 2015	
Cohort 3	n.a.		

Note: For BMI-related outcomes, we used students' winter BMI measurements taken immediately before Get Fit began, as opposed to their fall measurements. For consistency across outcomes, we refer to all changes as being measured from fall to spring.

n.a. = not applicable. In Cohort 3 sites, the number of Get Fit-eligible students was too small to use the random assignment approach. Consequently, all Get Fit-eligible students in Cohort 3 sites received Get Fit. Without a control group, we could not estimate the one-year impact of Get Fit.

We estimated the one-year impact of Get Fit using multivariate regression models that accounted for differences in student and site characteristics. The models were similar to those used to estimate the impact of the Prevention component in that we used ordinary least squares regression analysis to estimate the impact of Get Fit on outcome measures that were continuous variables and used logistic regression analysis to estimate the impact on binary outcome measures. The main independent variables were (1) an indicator that the student's outcome was measured in the spring, versus being measured in the fall; (2) an indicator that the student was in the intervention group, versus the control group; and (3) an indicator that the student's outcome was measured in the spring and the student was in the intervention group, versus having the outcome measured in the fall or being in the control group. The set of other explanatory variables consisted of students' age, grade, gender, and program site. The results of the analyses are presented using regression-adjusted statistics similar as described earlier for the Prevention analyses.

We estimated standard errors using Stata 14.1's *vce(cluster studentid)* command. However, unlike the Prevention analyses, a finite population correction factor was not applied to the standard errors in the difference-in-differences analyses. Although the data were obtained from a (finite) population of students in the Harlem Children Zone, the FPC does not apply to variance terms associated with random assignment because there is a negative correlation between the

intervention and control group means that cancels the gains from using the FPC (Schochet 2008). We made the same multiple comparison adjustments in the difference-in-differences analyses as in the Prevention analyses using the same domains of confirmatory outcomes and the Benjamini-Hochberg procedure.

We estimated the two- and three-year impacts of Prevention and Get Fit using only those students who were in the intervention group in Cohort 1 in SY 2012–2013 or Cohort 2 in SY 2013–2014. Because there was no control group in this analysis, we used the same pre-post analysis methods used to estimate the impact of the Prevention component to estimate the impact of Get Fit plus Prevention.

### **C. Analysis weights**

All analyses used weights to account for survey nonresponse in the student survey and for missing data in both the PACER and BMI data. Weights were constructed separately by impact analysis (Prevention, Get Fit, and Get Fit plus Prevention) and data source (student survey, PACER, and BMI). We used several steps to construct each set of weights. First, we estimated regressions predicting the likelihood of a student responding to the student survey (or having nonmissing information in the PACER and BMI data). The variables used in these regressions consisted of student's gender and grade and the after-school site they attended. We then used the variables associated with nonresponse to form weighting classes. Within each weighting class, the weight was defined as the number of respondents and nonrespondents divided by the number of respondents.<sup>9</sup>

Based on weighted data, the findings are representative of students who attended HCZ afterschool programs at each point of data collection. For example, the one-year impacts of Prevention are representative of students who attended afterschool programs in the fall and the spring of a site's implementation year, whereas the two-year impacts are representative of students who attended afterschool programs in the fall of a site's implementation year and the spring of the subsequent year. The findings in this report are not representative of *all* students in HCZ, however. For example, they do not represent what the impacts of Healthy Harlem would be for students who chose not to attend afterschool programs, or who attended in the fall but stopped attending before the spring. We cannot determine whether Healthy Harlem may be more effective or less effective for those students who did not attend.

### **D. Constructing analysis samples**

Although Healthy Harlem was offered to all students in participating HCZ schools, the analyses of the impact of Prevention and Get Fit were based on specific groups of students.

#### **1. Analysis restrictions for Prevention analysis**

Prevention was offered to all students in pre-kindergarten through 12th grade attending after-school programs. Because HCZ staff administered the student survey only to students in 4th grade and higher, we restricted the analysis of the impact of Prevention on students' outcomes

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<sup>9</sup> If the number of students in any weighting cell was fewer than 20, we used a raking algorithm to determine the weights.

over one year to students in grades 4 to 12 in the fall of their sites' implementation year. For consistency across outcome measures, we applied this restriction to all outcomes, including those based on fitness and BMI data.

For the two- and three-year impact analyses, we excluded students who, based on their grade in their site's implementation year, would graduate before the follow-up survey. We restricted the analysis of the two-year impact of Prevention to students in grades 4 to 11 in their sites' implementation year in order to obtain a follow-up observation for 11th-grade students before they graduated at the end of 12th grade. Similarly, we restricted the analysis of the three-year impact of Prevention to students in grades 4 to 10 in their sites' implementation year in order to obtain a follow-up observation for 10th graders before 12th grade.

In addition to the grade restrictions, we also excluded from the analysis of the impact of Prevention (1) any student who had received medical support (and whose BMI was at or above the 99th percentile of the BMI distribution) and (2) any student randomly assigned to Get Fit in the site's implementation year or who received Get Fit in any subsequent year. For Cohort 1, for example, we excluded from the two-year impact analysis of Prevention all students in the intervention group in SY 2012–2013, students in the control group in SY 2012–2013 who received Get Fit in SY 2013–2014, and students who were not eligible for Get Fit in SY 2012–2013 but became eligible the following year and received Get Fit then.<sup>10</sup>

Finally, we excluded students from the Prevention analysis if they did not attend an after-school site in its initial implementation year or if they moved from that site before we collected follow-up data. For example, the analysis did not include students who joined a Cohort 1 site in SY 2013–2014, the year after its initial implementation year. Similarly, the analysis excluded Cohort 1 students who attended a Cohort 1 site in SY 2012–2013 but moved to a Cohort 2 site in SY 2013–2014.<sup>11</sup>

## **2. Analysis restrictions for Get Fit analysis**

Get Fit was offered to students in grades 6 to 12 who had BMI at or above the 85th percentile and below the 99th percentile of the BMI distribution. Students in grades 6 to 11 who randomly assigned to the intervention group were offered Get Fit that year, whereas control group students were offered it the next year, provided they remained eligible for Get Fit. All students in grade 12 who were eligible for Get Fit were offered Get Fit because they would not have the opportunity to receive it after graduating if they were placed in the control group. Because there was no control group for 12th-grade students, we restricted the analyses of the impact of Get Fit to students in grades 6 to 11.

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<sup>10</sup> For the analysis of BMI outcomes, we also excluded all students in one after-school site due to concerns about height and weight measurements. Our findings were robust to this exclusion in terms of the sign of the impact estimate and its statistical significance.

<sup>11</sup> Any student initially in Cohort 1 who joined either Cohort 2 or 3 in that cohort's initial implementation year was not included in the Cohort 2 or 3 analysis. Similarly, any student initially in Cohort 2 who joined Cohort 3 in its initial implementation year was not included in the Cohort 3 analysis.

We restricted the analysis of the impact of Get Fit plus Prevention to students in grades to 6 to 11 in their sites' implementation year (for two-year impacts) and students in grades 6 to 10 (for three-year impacts) in order to have a follow-up observation before the students graduated. These analyses were restricted to students in Cohort 1 who were in the intervention group in SY 2012–2013 and students in Cohort 2 who were in the intervention group in SY 2013–2014, regardless of participation in Get Fit in subsequent years. Thus, these analyses focus on the longer-term impact of students who were initially assigned to Get Fit.<sup>12</sup>

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<sup>12</sup> As in the Prevention analyses, for the analysis of BMI outcomes we also excluded all students in the after-school site with questionable height and weight measurements.

## **APPENDIX B**

### **IMPACTS OF HEALTHY HARLEM ON STUDENT OUTCOMES**

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**Table B.1. Impacts of the Prevention component on nutrition knowledge and attitudes**

	Cohorts 1, 2, and 3 one-year impact			Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff	Fall	Spring	Diff
Nutrition knowledge									
All students	41.1	46.5	5.4***	40.3	50.0	9.7***	38.8	52.9	14.1***
Boys	39.5	44.3	4.8***	38.7	47.7	9.0***	35.0	50.8	15.8***
Girls	42.6	48.6	6.0***	41.4	52.2	10.8***	41.6	54.9	13.3**
Self-efficacy related to physical activity									
All students	1.8	1.8	0.0**	1.7	1.8	0.1**	1.7	1.8	0.1**
Boys	1.8	1.8	0.0	1.8	1.8	0.0*	1.8	1.9	0.1*
Girls	1.7	1.8	0.1***	1.7	1.7	0.0	1.7	1.8	0.1
Self-efficacy related to healthy eating									
All students	2.0	1.9	-0.1**	1.9	1.9	0.0	1.8	1.9	0.1
Boys	2.0	2.0	0.0	1.9	1.9	0.0	1.9	1.9	0.0
Girls	1.9	1.9	0.0**	1.8	1.8	0.0	1.6	2.0	0.4*
Importance of physical activity									
All students	3.3	3.3	0.0	3.3	3.2	-0.1**	3.2	3.2	0.0
Boys	3.4	3.4	0.0	3.3	3.3	0.0	3.3	3.3	0.0
Girls	3.3	3.3	0.0	3.3	3.1	-0.2**	3.1	3.1	0.0

Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For nutrition knowledge, one-year, two-year, and three-year estimates were based on 1,330 students, 698 students, and 267 students, respectively. The sample sizes for self-efficacy related to physical activity were 1,411, 738, and 277, respectively. The sample sizes for self-efficacy related to healthy eating were 1,395, 731, and 278, respectively. The sample sizes for importance of physical activity were 1,401, 733, and 276, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.2. Impacts of the Prevention component on perceived social support**

	Cohorts 1, 2, and 3 one-year impact			Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff	Fall	Spring	Diff
Social support for healthy eating									
All students	1.6	1.7	0.1***	1.5	1.6	0.1**	1.6	1.6	0.0
Boys	1.6	1.7	0.1***	1.5	1.7	0.2*	1.7	1.4	-0.3
Girls	1.6	1.7	0.1**	1.5	1.6	0.1	1.5	1.7	0.2
Social support for physical activity from parents or friends									
All students	1.7	1.8	0.1***	1.7	1.7	0.0**	1.7	1.7	0.0
Boys	1.7	1.8	0.1***	1.7	1.7	0.0*	1.6	1.7	0.1
Girls	1.8	1.8	0.0	1.7	1.7	0.0	1.8	1.6	-0.2
Social support for physical activity at school and after-school programming									
All students	3.0	3.1	0.1***	3.0	3.0	0.0	3.1	2.9	-0.2
Boys	3.1	3.1	0.0***	3.0	3.1	0.1	3.1	3.1	0.0
Girls	3.0	3.1	0.1***	2.9	2.9	0.0	3.0	2.7	-0.3*

Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For social support for healthy eating, one-year, two-year, and three-year estimates were based on 1,385 students, 728 students, and 278 students, respectively. The sample sizes for social support for physical activity from parents or friends were 1,410, 738, and 277, respectively. The sample sizes for social support for physical activity at school and after-school programming were 1,414, 739, and 277, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.3. Impacts of the Prevention component on fitness**

	Cohorts 1, 2, and 3 one-year impact			Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff	Fall	Spring	Diff
PACER laps									
All students	19.6	22.2	2.6***	23.9	30.5	6.6***	26.3	30.1	3.8
Boys	23.5	26.3	2.8***	30.6	38.9	8.3***	34.6	41.0	6.4
Girls	15.7	18.1	2.4***	16.1	23.0	6.9***	19.1	19.5	0.4
Harlem fitness zone (percentage of students)									
All students	37.9	46.0	8.1***	33.2	48.6	15.4***	37.0	36.2	-0.8
Boys	48.9	55.4	6.5***	45.6	62.5	16.9***	51.6	50.7	-0.9
Girls	26.6	36.1	9.5***	20.8	34.4	13.6***	23.8	20.6	-3.2

Source: Healthy Harlem evaluation, 2012–2015, PACER fitness test.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For PACER laps, one-year, two-year, and three-year estimates were based on 1,461 students, 811 students, and 295 students, respectively. The sample sizes for Harlem fitness zone were 1,096, 646, and 273, respectively.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.4. Impacts of the Prevention component on body mass index**

	Cohorts 1, 2, and 3 one-year impact			Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff	Fall	Spring	Diff
BMI z-score									
All students	0.61	0.60	0.01	0.25	0.22	-0.03	0.04	0.17	0.13
Boys	0.55	0.59	0.04	0.13	0.24	0.11	-0.06	0.15	0.21
Girls	0.67	0.61	-0.06**	0.39	0.17	-0.22**	0.13	0.19	0.06

Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Notes: Estimates were regression adjusted for students' age, grade, and site. One-year, two-year, and three-year estimates were based on 891 students, 608 students, and 205 students, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.5. Impacts of Get Fit on nutrition knowledge and attitudes**

	Cohorts 1 and 2 one-year impact (intervention group)			Cohorts 1 and 2 one-year impact (control group)			Difference between intervention group difference and control group difference
	Fall	Spring	Diff	Fall	Spring	Diff	
Nutrition knowledge							
All students	45.3	51.2	5.9	47.5	51.8	4.3	1.6
Boys	44.4	50.1	5.7	45.3	50.9	5.6	0.1
Girls	45.8	52.1	6.3	49.3	52.8	3.5	2.8
Self-efficacy related to healthy eating							
All students	1.86	1.90	0.04	1.84	1.90	0.06	-0.02
Boys	1.83	1.92	0.10	1.86	1.88	0.02	0.08
Girls	1.89	1.89	0.00	1.84	1.91	0.07	-0.07
Self-efficacy related to physical activity							
All students	1.72	1.77	0.05	1.75	1.78	0.03	0.02
Boys	1.73	1.81	0.08	1.79	1.83	0.04	0.04
Girls	1.71	1.74	0.03	1.71	1.74	0.03	0.00
Importance of physical activity							
All students	3.16	3.18	0.02	3.16	3.22	0.06	-0.04
Boys	3.18	3.20	0.02	3.22	3.27	0.05	-0.03
Girls	3.13	3.16	0.03	3.11	3.19	0.08	-0.05

Source: Healthy Harlem evaluation, 2012-2015, student survey.

Note: The differences between the fall-to-spring changes for the intervention and control groups were not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. For nutrition knowledge, self-efficacy related to healthy eating, self-efficacy related to physical activity, and importance of physical activity, sample sizes were 253 students, 268 students, 272 students, and 272 students, respectively.

**Table B.6. Impacts of Get Fit on perceived social support**

	Cohorts 1 and 2 one-year impact (intervention group)			Cohorts 1 and 2 one-year impact (control group)			Difference between intervention group difference and control group difference
	Fall	Spring	Diff	Fall	Spring	Diff	
Social support for healthy eating							
All students	1.5	1.8	0.3	1.6	1.7	0.1	0.2
Boys	1.4	1.6	0.2	1.5	1.7	0.2	0.0
Girls	1.6	1.9	0.3	1.7	1.8	0.1	0.2
Social support for physical activity at school and after- school programming							
All students	2.9	3.0	0.1	2.8	2.9	0.1	0.0
Boys	2.9	3.0	0.1	2.9	3.1	0.2	-0.1
Girls	2.9	2.9	0.0	2.8	2.9	0.1	-0.1
Social support for physical activity from parents or friends							
All students	1.7	1.7	0.0	1.7	1.7	0.0	0.0
Boys	1.6	1.7	0.1	1.7	1.7	0.0	0.1
Girls	1.7	1.7	0.0	1.7	1.7	0.0	0.0

Source: Healthy Harlem evaluation, 2012-2015, student survey.

Note: The differences between the fall-to-spring changes for the intervention and control groups were not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. Estimates for social support related to healthy eating, social support for physical activity at school and after-school programming, and social support for physical activity from parents or friends were based on 263 students, 273 students, and 271 students, respectively, attending sites in Cohorts 1 and 2.

**Table B.7. Impacts of Get Fit on fitness**

	Cohorts 1 and 2 one-year impact (intervention group)			Cohorts 1 and 2 one-year impact (control group)			Difference between intervention group difference and control group difference
	Fall	Spring	Diff	Fall	Spring	Diff	
PACER laps							
All students	16.3	18.4	2.1	16.7	17.2	0.5	1.6
Boys	19.9	22.6	2.7	22.4	23.5	1.1	1.6
Girls	12.7	14.9	2.2	12.1	12.8	0.7	1.5
Harlem fitness zone (percentage of students)							
All students	12.7	19.4	6.7	14.1	16.7	2.6	4.1
Boys	16.9	26.5	9.6	23.4	28.3	4.9	4.7
Girls	9.1	13.4	4.3	6.8	7.5	0.7	3.6

Source: Healthy Harlem evaluation, 2012-2015, PACER fitness test.

Note: The differences between the fall-to-spring changes for the intervention and control groups were not statistically significant at the 0.05 level. Estimates were regression adjusted for students' gender, age, grade, and site. For PACER laps and Harlem fitness zone outcomes, estimates were based on 274 students attending sites in Cohorts 1 and 2.

**Table B.8. Impacts of Get Fit on body mass index**

	Cohorts 1 and 2 one-year impact (intervention group)			Cohorts 1 and 2 one-year impact (control group)			Difference between intervention group difference and control group difference
	Fall	Spring	Diff	Fall	Spring	Diff	
BMI z-score							
All students	1.59	1.52	-0.07	1.64	1.61	-0.03	-0.04*
Boys	1.57	1.51	-0.06	1.64	1.59	-0.05	-0.01
Girls	1.61	1.53	-0.08	1.63	1.61	-0.02	-0.06***
Percentage of students overweight or obese							
All students	92.2	87.2	-5.0	91.3	91.5	0.2	-5.2*
Boys	88.9	88.0	-0.9	88.5	88.3	-0.2	-0.7
Girls	95.8	86.7	-9.1	93.6	93.5	-0.1	-9.0**
Percentage of students obese							
All students	44.9	38.1	-6.8	47.7	45.4	-2.3	-4.5
Boys	42.5	36.7	-5.8	48.8	45.0	-3.8	-2.0
Girls	47.8	40.2	-7.6	45.7	44.9	-0.8	-6.8

Source: Healthy Harlem evaluation, 2012-2015, height and weight measurements.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For BMI z-score, percentage of students overweight or obese, and percentage of students obese, estimates were based on 233 students attending sites in Cohorts 1 and 2.

\* Difference between fall-to-spring changes for the intervention and control groups is statistically significant at the  $p < 0.05$  level, two-tailed test.

\*\* Difference between fall-to-spring changes for the intervention and control groups is statistically significant at the  $p < 0.05$  level, two-tailed test.

\*\*\* Difference between fall-to-spring changes for the intervention and control groups is statistically significant at the  $p < 0.001$  level, two-tailed test.

**Table B.9. Impacts of Get Fit and Prevention on nutrition knowledge and attitudes**

	Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff
Nutrition knowledge						
All students	44.0	55.0	11.0***	40.2	54.0	13.8**
Boys	42.2	54.7	12.5***	35.1	59.8	24.7**
Girls	45.8	55.0	9.2**	44.8	48.9	4.1
Self-efficacy related to physical activity						
All students	1.7	1.8	0.1***	1.7	1.8	0.1**
Boys	1.7	1.8	0.1**	1.6	1.8	0.2
Girls	1.7	1.8	0.1*	1.7	1.8	0.1
Self-efficacy related to healthy eating						
All students	1.9	1.9	0.0	1.9	1.8	-0.1
Boys	1.9	1.9	0.0	1.9	1.8	-0.1
Girls	1.9	1.8	-0.1*	1.9	1.8	-0.1
Importance of physical activity						
All students	3.1	3.2	0.1	3.0	3.3	0.3
Boys	3.2	3.2	0.0	3.2	3.2	0.0
Girls	3.1	3.2	0.1	2.9	3.2	0.3

Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For nutrition knowledge, two-year and three-year estimates were based on 366 students and 212 students, respectively. The sample sizes for self-efficacy related to physical activity were 396 and 226, respectively. The sample sizes for self-efficacy related to healthy eating were 390 and 222, respectively. The sample sizes for importance of physical activity were 396 and 222, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.10. Impacts of Get Fit and Prevention on perceived social support**

	Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff
Social support for healthy eating						
All students	1.5	2.0	0.5***	1.7	1.7	0.0
Boys	1.4	1.9	0.5**	1.9	1.3	-0.6
Girls	1.7	1.9	0.2	1.7	1.9	0.2
Social support for physical activity from parents or friends						
All students	1.7	1.8	0.1***	1.7	1.7	0.0
Boys	1.6	1.8	0.2**	1.7	1.6	-0.1
Girls	1.7	1.8	0.1	1.7	1.7	0.0
Social support for physical activity at school and after-school programming						
All students	2.9	3.0	0.1	2.8	3.0	0.2
Boys	2.9	3.0	0.1	2.7	3.1	0.4
Girls	2.8	3.0	0.2	2.9	2.8	-0.1

Source: Healthy Harlem evaluation, 2012–2015, student survey.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For social support for healthy eating, two-year and three-year estimates were based on 382 students and 218 students, respectively. The sample sizes for social support for physical activity from parents or friends were 394 and 224 respectively. The sample sizes for social support for physical activity at school and after-school programming were 396 and 226, respectively.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.11. Impacts of Get Fit and Prevention on fitness**

	Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff
PACER laps						
All students	17.4	25.2	7.8***	16.9	21.6	4.7
Boys	22.6	33.2	10.6***	20.8	31.6	10.8*
Girls	12.5	19.8	7.3***	13.0	14.1	1.1
Harlem fitness zone (percentage of students)						
All students	11.4	35.4	24.0***	7.0	22.7	15.7
Boys	20.3	47.3	27.0***	8.0	35.6	27.6*
Girls	3.3	27.1	23.8***	7.9	10.3	2.4

Source: Healthy Harlem evaluation, 2012–2015, PACER fitness test.

Note: Estimates were regression adjusted for students' gender, age, grade, and site. For PACER laps and Harlem fitness zone outcomes, two-year and three-year estimates were based on 408 and 228 students, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

**Table B.12. Impacts of Get Fit and Prevention on body mass index**

	Cohorts 1 and 2 two-year impact			Cohort 1 three-year impact		
	Fall	Spring	Diff	Fall	Spring	Diff
BMI z-score						
All students	1.64	1.48	-0.16**	1.60	1.60	-0.064
Boys	1.69	1.50	-0.19*	1.76	1.48	-0.277
Girls	1.61	1.44	-0.17**	1.54	1.57	0.023
Percentage of students overweight or obese						
All students	100.0	84.4	-15.6***	100.0	82.6	-17.4***
Boys	100.0	86.7	-13.3***	100.0	83.8	-16.2**
Girls	100.0	82.5	-17.5***	100.0	81.4	-18.6***
Percentage of students obese						
All students	44.9	36.7	-8.2***	48.0	39.3	-8.7
Boys	48.1	39.8	-8.3*	54.5	38.3	-16.2*
Girls	42.3	34.2	-8.1**	41.0	40.4	-0.6

Source: Healthy Harlem evaluation, 2012–2015, height and weight measurements.

Notes: Estimates were regression adjusted for students' age, grade, and site. For BMI z-score, percentage of students overweight or obese, and percentage of students obese, two-year and three-year estimates were based on 316 and 176 students, respectively.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

\*\*\*Significantly different from zero at the .001 level, two-tailed test.

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