Youth Development Strategies, Inc.

Promoting Healthy Lifestyles

Impact of Boys & Girls Clubs of America's Triple Play Program on Healthy Eating, Exercise Patterns, and Developmental Outcomes

Final Evaluation Report

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The report was completed in August 2009 and is available through Youth Development Strategies, Inc. online at: www.ydsi.org

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Suggested Citation: Gambone, PhD., Akey, Ph.D., Furano, M.P.A. and Osterman, M.A. (2009). Promoting Healthy Lifestyles: The Impact of Boys & Girls Clubs of America's Triple Play Program on Healthy Eating, Exercise Patterns, and Developmental Outcomes (Full Report). Philadelphia: Youth Development Strategies, Inc.

About the Funders:
This report is based on a project funded by The Coca-Cola Company and Kraft Foods Inc. The contents and views expressed herein are solely those of the authors.

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ACKNOWLEDGMENTS

This study was contracted by Boys & Girls Clubs of America (BGCA) to assess the impact of the Triple Play initiative in their Clubs. Funding for Triple Play was received by BGCA from The Coca-Cola Company and Kraft Foods Inc.

We would first and foremost like to thank the staff and members of the Boys & Girls Clubs who graciously invested their valuable time and effort into collecting the data for this evaluation. The staff at these 30 Clubs worked tirelessly to ensure that we retained as many youth as possible in the three surveys conducted over a 22-month period; a challenge to say the least given the mobility of youth in their communities and the numerous demands made on their scarce resource of time. The Triple Play Clubs that participated in the study are:

- Boys & Girls Club of Brattleboro, Inc., 17 Flat Street Boys & Girls Club, Inc., Vt.
- Boys & Girls Club of Carlsbad, Village Unit, Calif.
- Boys & Girls Club of Corpus Christi, Boys & Girls Club of Corpus Christi, Texas
- Boys & Girls Club of Craig, Colo.
- Boys & Girls Club of Evansville, Ind.
- Boys & Girls Club of Marion County, Boys & Girls Club of Marion County, Fla.
- Boys & Girls Club of Ottawa County, Okla.
- Boys & Girls Club of Topeka, Auburn, Kan.
- Boys & Girls Club of Trenton/Mercer County, N.J.
- Boys & Girls Club of Tustin, Calif.
- Boys & Girls Club of Vernon, Texas
- Boys & Girls Club of Western Broome, The Boys & Girls Club of Western Broome, Inc., N.Y.
- Boys & Girls Clubs of Central Minnesota, Southside Boys & Girls Club, Minn.
- Boys & Girls Clubs of Escambia, Fla.
- Boys & Girls Clubs of Greater Fort Worth, East Side Branch, Texas
- Boys & Girls Clubs of Greater Lee County, Potter-Daniel Boys & Girls Club, Ala.
- Boys & Girls Clubs of Mitchell County, Ga.
- Boys & Girls Clubs of Nash/Edgecombe Counties, Lucy Ann Boddie Brewer Unit, N.C.
- Boys & Girls Clubs of Naval Base Kitsap, Jackson Park Youth and Teen Center, Wash.
- Boys & Girls Clubs of Pawtucket, Alfred Elson, Jr. Branch, R.I.
- Boys & Girls Clubs of Wayne County, N.C.
- Boys & Girls Clubs of Wayne County, Indiana, Richard E. Jeffers Unit, Ind.
- Boys & Girls Clubs of Whatcom County, Bellingham Unit, Wash.
- Ellsworth Air Force Base Youth Activities Center, S.D.
- Fort Wainwright Youth Services, Alaska
- Mountain Home AFB Youth Center, Idaho
- Salvation Army Boys & Girls Club of Washington County, Ohio
- Waterville Area Boys & Girls Club, Maine

- Winifred Crawford Dibert Boys & Girls Club of Jamestown, Inc., Jamestown Boys & Girls Club, Inc., N.Y.
- Whiteman Air Force Base Youth Center, Mo.

The youth were tolerant of the repeated surveys needed to track the initiative's progress – which is no small feat in the context of the many research efforts they are asked to participate in across the settings where they spend time. We would like to especially acknowledge the youth in the control Clubs who were not benefiting from the Triple Play program, but participated in the research nonetheless because they knew it would help "youth in Clubs all over the country."

The staff and youth at Clubs where we spent time during our site visits were both welcoming and honest, providing us with a wealth of information, meaningful insights and good food.

This effort would not have succeeded to the extent it did without the continued attention and commitment of the national staff at BGCA. They encouraged and supported the local Clubs to participate in the research and provided the research team with all the logistical support needed in such an effort. Many BGCA staff read and commented on early drafts of the report. In particular, we appreciate the helpful suggestions of Wayne B. Moss, who coordinated feedback from other BGCA staff and communicated it to us.

Other colleagues also carefully read and provided valuable comments on drafts of the report: Dr. Tenley Albright, Dr. Steven Blair, Dr. James P. Connell, Dr. William Dietz, Dr. Duck-Chul Lee, Dr. Francisco B. Ortega and Dr. Milbrey McLaughlin. The report is certainly better than it would have been without their input.

CHAPTER 1: INTRODUCTION AND BACKGROUND

When today's adults reach back in their minds to childhood their strongest memories often include physical ones – running, skipping, bicycling, playing ball, jumping rope, chasing and being chased. Being physically active was a defining dimension of urban or suburban childhood for at least the first two thirds of the twentieth century. Over the past twenty or so years, that has become less and less the case, and in the past few years physical inactivity among children has come to be viewed as a distinct social problem (Halpern, 2002).

A decrease in the number of hours young people spend engaged in physical activity and the poor food choices many of them make has increasingly become the focus of national attention. Many complex and interwoven factors contribute to this predicament. These include: loss of play space; a decline in physical education requirements within the school setting; the prevalence of sedentary activities such as television and video games; and omnipresent calorie-dense and nutrient-deficient fast food. In short, young people currently reside in an environment that de-emphasizes good health and nutrition, while reinforcing inactivity and poor eating habits. Needless to say, these circumstances not only pose health risks to young people, they also present a particularly vexing challenge to youth-serving organizations intent on ensuring the well-being of their participants.

Recent research related to diet and physical activity underscores the depth and breadth of the current situation. Several data sources indicated that significant numbers of young people make poor food choices, engage in unhealthy dieting behaviors and participate in insufficient amounts of physical activity. Between 1980 and 2004, the prevalence of overweight tripled among children and adolescents aged 6-19 years (Ogden, Flegal, Carroll, and Johnson, 2006). When those of both sexes between two and 19 years are considered, one-third are either at risk for being overweight or are overweight (Ogden, et al., 2006).

The health implications for overweight children are also well documented. For example, heart disease, high blood pressure, hardening of the arteries, type 2 diabetes, metabolic syndrome, high cholesterol, asthma, sleep disorders, liver disease, orthopedic complications and mental health problems are some of the health complications of carrying excess weight (Kohn, Rees, Brill, Fonseca, Jacobson, Katzman, Loghmani, Neumark-Sztainer, & Schneider, 2006). The likelihood of a severely obese child or adolescent having impaired health-related quality of life was 5.5 times greater than a healthy child or adolescent, and similar to a child diagnosed as having cancer (Schwimmer, Burwinkle, & Varni, 2003*)*. In addition to the impact on physical health, overweight children and adolescents are targets of early and systematic social discrimination. The psychological stress of social stigmatization can cause low self-esteem, which, in turn, can hinder academic and social functioning (Schwartz & Puhl, 2003; Hill & Trowbridge, 1998). All

of these potentially adverse outcomes underscore the need to help youth develop healthy eating and activity habits to promote life-long good health.

These statistics point to the need for both behavioral and cultural change. This is a supply-and-demand side issue that will require changes in how unhealthy products are advertised and made available to young people, and changes in how these young people (and their families) address their dietary and physical activity needs. In addition, this effort also requires the active participation of the full range of institutions with which young people regularly come in contact. These include schools, as well as youth-serving organizations.

Most of the interventions designed to address physical health issues among youth are targeted at helping those who are already overweight or obese lose weight. But in recent years, youth practitioners, researchers and the policy community have reconceived youth interventions in a way that recognizes the need for a comprehensive developmental approach that aims to foster and support healthy outcomes, rather than solely prevent or remediate unhealthy outcomes.

Boys & Girls Clubs of America (BGCA) responded to this near-epidemic challenge by developing and implementing **Triple Play: A Game Plan for the Mind, Body and Soul** at Clubs across the country. By building on such Club fundamentals as the Gamesroom, gym and snack time – among others – Triple Play addresses behavioral and attitudinal factors in the lives of young people that put them at risk for the kinds of health and psycho-social difficulties noted above. Clubs that have implemented Triple Play hold out promise to the young people who attend them by offering healthy attitudinal and behavioral alternatives that can change their prospects for the future.

The Importance of Fostering Healthy Lifestyles

BGCA's Triple Play program is designed to build the capacity of young people to make informed decisions about their health. It is vitally important to establish appropriate health attitudes, knowledge and skills in childhood for a number of reasons. First, the phenomenal growth that occurs during adolescence is second only to that in the first year of life. In addition, total nutritional needs are higher during adolescence than at any other time in the life cycle (Dyuff, 2002).Second, establishing healthy attitudes and practices regarding physical activity and exercise in childhood is essential because they shape behaviors and attitudes in adulthood (Kohl and Hobbs, 1998).In fact, the secretaries of the U.S. Department of Health and Human Services and Department of Education identified promoting participation of youth in physical activity and sports as a "critical national priority" and one of the "nation's leading health indicators" for the next decade (U.S. Department of Health and Human Services, 2001).And finally, participation in activities that allow youth to establish healthy relationships with both adults and peers has been

shown to have a significant effect on youth's likelihood of achieving good developmental and young adult outcomes (Gambone, Klem, & Connell. 2002).

What Is Triple Play?

Triple Play: A Game Plan for the Mind, Body and Soul is a national BGCA program designed to demonstrate how eating smart, keeping fit and forming positive relationships add up to a healthy lifestyle for Club members ages 6-18. It is a multi-faceted program designed to help young people become healthy, active and learn new ways to handle stress, maintain a healthy body and form positive relationships. This approach includes three major components that focus on different aspects of healthy living:

- **Mind –** Healthy Habits provides a wide-ranging approach to addressing nutrition education and healthy living**.** The approach incorporates healthy living and active learning into every part of the Club experience, from the gym to the learning center to the arts and crafts room. To this end, the Healthy Habits curriculum consists of 10 sessions for each of three age groups: 6-8, 9-12 and teens.

- **Body** – Sports, fitness and recreation programs are designed to get members up and active through daily challenges, games and tournaments to strengthen their body. Additionally, sports leadership Clubs allow teens to develop leadership skills and focus on community service and volunteerism.

- **Soul –** Triple Play consciously incorporates elements of belonging, usefulness, influence and competence. For example, sessions have been designed to provide a mechanism for older members to assist younger members, thus providing older youth with a sense of usefulness and influence while helping them reinforce the positive behaviors that are the goal of the program. Social recreation utilizes the Gamesroom and other Club areas to teach and reinforce social and ethical skills young people need to be successful. More than any other area of a Boys & Girls Club, a Gamesroom defines the traditional Club experience. It is a place where kids can play board and table games, compete in a tournament, learn a new activity or just visit with friends. The room is filled with pool tables and ping-pong, but the purpose is much deeper. The Gamesroom staff help members learn skills while teaching them how to work together.

The progression of Triple Play activities are designed to build on knowledge over time – but still be able to stand alone as one-time activities. While each program component can stand alone, integrating them allows Club members to reap more powerful, lifelong benefits. The program design is dynamic, interactive and encourages open discussions. It also features engaging hands-on activities to maintain excitement and interest.

Theory of Change

Underlying the program described above and the evaluation detailed below is a theory of change that describes the processes and outcomes that are part of the Triple Play intervention. Figure 1 shows the components of the Triple Play program, and the short-term, intermediate and long-term outcomes thought to result from effective implementation of Triple Play. Together, these processes and the short-term and intermediate outcomes frame the study questions below.[1]

In the set of boxes in Column A, short-term outcomes include increased knowledge of healthy habits, good nutrition and physical activity; increased physical activity; and increased positive interactions with other youth. These short-term outcomes then lead to the outcomes in Column B – better nutrition; more youth engaging in meaningful amounts of appropriate exercise; more positive peer interactions; and an increased sense of mastery and control. Finally, long-term outcomes in Column C, such as better physical and mental health; better social skills; and increased learning occur when youth are engaged in healthy behaviors.

Guiding Evaluation Research Questions

The purpose of this study was to examine whether BGCA's Triple Play program has an impact on youth outcomes in the areas of: (1) healthy nutrition knowledge and behavior; (2) physical activity and increased exercise levels; and (3) social relationship skills. Further, a number of organizational (Club) outcomes that are theoretically linked to positive youth outcomes were also examined: retention of members; frequency of attendance by members; participation levels in physical activities; and food offerings.

This national, longitudinal impact study uses a rigorous experimental design to test the effectiveness of implementing a focused health and nutrition initiative across the network – or "Movement" – of Boys & Girls Clubs in helping youth develop healthy habits. This study was designed to examine whether Triple Play is successful at helping youth establish the lifestyle habits (exercise and nutrition) that are essential to long-term health while also nurturing key social-psychological supports for development.

The core questions addressed by this study were:

1. *Are youth attending Boys & Girls Clubs that implement the Triple Play program more likely to acquire more nutritional knowledge, eat more healthy foods, be more physically active and be more likely to meet the accepted guidelines for levels of physical activity related to good long-term health than youth attending Boys & Girls Clubs that did not implement*

[1] *Because the length of the study was relatively brief (22 months) there was not sufficient time or resources to focus on the long term outcomes, many which would require a longer period of time to manifest.*

Triple Play?

2. *Do the Triple Play Clubs create more supportive environments that foster a greater sense of mastery and control and positive peer relationships among participants than the Clubs that did not implement Triple Play?*

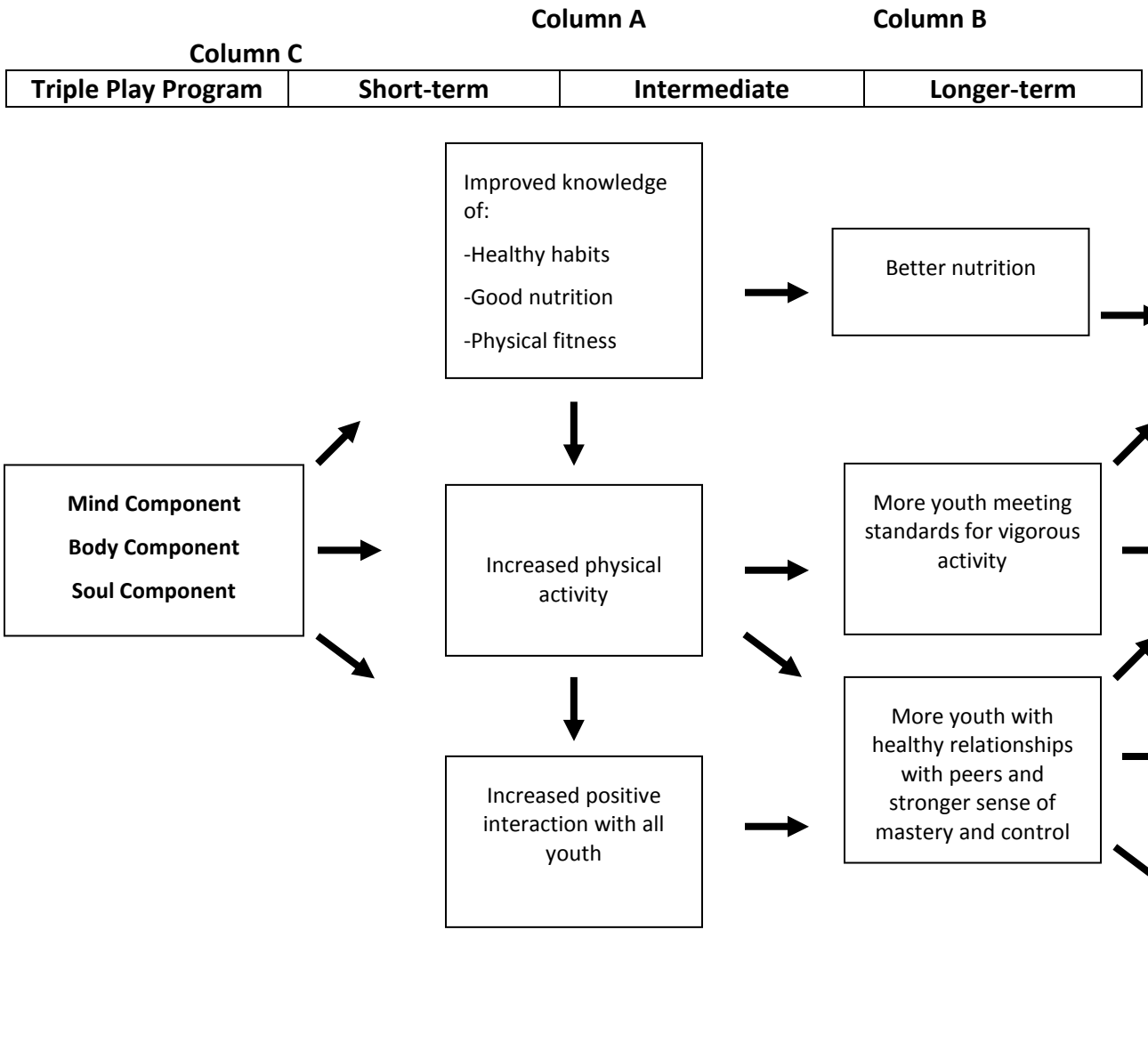
A consistent finding in intervention research is that the pathway to providing better outcomes for program participants is often through preventing the declines or losses experienced by non-program participants, rather than through boosting performance above that of comparable youth; that is, programs often create different trajectories for participants by keeping their outcomes level over time, while the pathway of their peers declines. So another key question for this study was:

3. *Are any observed advantages for participants due to; (a)maintaining baseline levels on outcomes while comparable youth's declined; or (b) increasing healthy outcomes from baseline levels at a greater rate than other youth?*

The final set of study questions address the issue of who the intervention might benefit most. We examined whether the trajectory of any observable program impacts varied depending on where youth were at the beginning of the program. We also explored whether the program had differential impacts on youth depending on gender, age and ethnicity – which can be especially important for an intervention targeted at promoting physical activity and healthy eating, which are culturally bound for gender and ethnic groups.

4. *Does Triple Play have a differential impact on trajectories for youth depending on their starting level of risk?*

5. *Does Triple Play have a differential impact on trajectories for youth depending on their gender, ethnicity or age?*


Column A
Column B
Column C
Triple Play Program
Short-term
Intermediate
Longer-term
Improved knowledge of:
-Healthy habits
-Good nutrition
-Physical fitness
Better nutrition
Mind Component
Body Component
Soul Component
Increased physical activity
More youth meeting standards for vigorous activity
More youth with healthy relationships with peers and stronger sense of mastery and control
Increased positive interaction with all youth

Overview of Evaluation Design and Study Measures

In this section, we provide a brief, non-technical overview of the impact study design, as well as a general description of the data collection methods and measures used in the study. Readers interested in a more technical explanation of the methodology are invited to review **Appendix A: Technical Report and Study Methodology**.

Evaluation Research Design

A cluster-randomized trial (CRT) design was used to examine the impact of Triple Play on youth. In this design, existing groups of individuals (e.g., clusters or Clubs, schools, classrooms), rather than the individuals themselves, are randomly assigned to treatment and control conditions. This design is especially appropriate for interventions and programs that serve whole groups, rather than individuals. Many social interventions, such as those in afterschool programs and community-based organizations, are designed to influence a larger social group, rather than disparate individuals. These programs also tend to be place-based in that the programs are constrained to existing organizations and places – that is, the intervention is not going to create new organizations or locations. CRTs have been increasingly used in the evaluation of such place-based initiatives for adolescents, such as smoking, drinking and sex prevention programs (Flay, 2000), community health-promotion initiatives (Murray, 2005), whole school reforms (Cook, Murphy, & Hunt, 2000) and nutrition education (Murray, 1998).

In these situations, it is often practically infeasible to randomly assign individuals to one group or another ignoring these larger social structures. Boys & Girls Clubs are examples of holistic programs aimed at meeting the needs of youth and are often situated in the neighborhoods and communities in which these youth reside. Because the programs offered at the Clubs are integrated and youth are inter-related in many ways beyond the specific program being assessed, the random assignment of youth to treatment and control groups within a given Club risks significant "spill-over" effects, or contamination of the treatment by the close interaction of the youth in the Club (Bloom, 2005).In other words, it is very difficult to keep youth who are receiving a particular program separate and apart from their peers in the Club who are not receiving that program.

Given these practicalities and risks, the CRT design is a more feasible option – a research design that still conveys the advantages of experiments. Experimental designs offer the strongest internal validity of any research design (e.g., ability to ascribe differences between groups to a treatment or a program) because they distribute any systematic differences in individuals (or organizations) randomly across the groups. When an adequate number of individuals and/or organizations are included in the study population, this attribution ability becomes increasingly more stable.

One major challenge in using a CRT design is that while the methodological strengths of experimental design are maintained, the estimates of impact and group differences are less precise than in studies that randomly assign individuals, rather than groups, to treatment and control groups. Therefore additional strategies, such as using individual covariates in analyses (characteristics of the youth in the sample) are needed to increase the precision of these impact estimates (Bloom, 2005).In the current study, several youth-level characteristics (e.g., age, gender, ethnicity, frequency and length of Club attendance) were used as covariates to reduce the within-youth variation in the statistical models, therefore increasing the precision of the impact estimates.

Because the goal of the study was to examine the impact of Triple Play on youths' healthy eating and exercise behaviors, their sense of mastery and control and quality of peer relationships, a longitudinal pre- and post-assessment design was implemented. Measures were collected at baseline (prior to Clubs implementing Triple Play), at the mid-point of the study to assess any intermediate growth and at a final follow-up point to assess impact of the program.

Club Sample Selection and Randomization

The sampling frame or group of Clubs eligible for the study was based on Boys & Girls Clubs who responded to a national office request for grant proposals for funding and program resources to implement the Triple Play program in their Clubs. Clubs that applied had not previously implemented Triple Play in their programming. The second year of grant applicants solicited in the fall of 2005 for 2006 implementation served as the pool of Clubs from which study Clubs were randomly assigned.

During the 2006 grant cycle, BGCA staff rated all Club applications for new Triple Play grants in each of five regions (Midwest, Southeast, Northeast, Southwest and Pacific). The 18 top-rated Clubs from each region were included in the region-stratified population from which Clubs were recruited (for a total of 90 potentially eligible Clubs). It was determined that, to provide the statistical power needed, four treatment Clubs per region and two control Clubs per region would be used for a total of 30 study Clubs (20 treatment and 10 control Clubs).Clubs in each region were numbered one through 18 and a list of random numbers from one through 18 was generated. When a Club's number was selected, it was then randomly assigned to one of the three groups (treatment, control or replacement). Clubs were contacted in the order they were assigned and asked to participate in the study. If a treatment Club refused participation, the next assigned treatment Club on the list was contacted. If a control Club refused participation, the next assigned control Club was contacted. This procedure was repeated until four treatment Clubs and two control Clubs were selected within in each of the five regions (see Table 1.1).Clubs assigned to implement Triple Play were awarded implementation grants from BGCA.

Control sites were given smaller research grants to defray research costs and a promise of becoming a funded implementation site in 2008 at the conclusion of the study.

TABLE 1.1: Study Sites

Region	Treatment Sites	Control Sites
Midwest	Boys & Girls Clubs of Wayne County, Richard E. Jeffers Unit, Ind. Boys & Girls Clubs of Central Minnesota, Southside Boys & Girls Club, Minn. Ellsworth Air Force Base Youth Activities Center, S.D. Salvation Army Boys & Girls Club of Washington County, Ohio	Boys & Girls Club of Evansville, Ind. Whiteman Air Force Base Youth Center, Mo.
Northeast	Waterville Area Boys & Girls Club, Maine Winifred Crawford Dibert Boys & Girls Club of Jamestown, Inc., Jamestown Boys & Girls Club, Inc., NY. Boys & Girls Club of Western Broome, The Boys & Girls Club of Western Broome, Inc., N.Y. Boys & Girls Club of Brattleboro, Inc., 17 Flat Street Boys & Girls Club, Inc. Vt.	Boys & Girls Club of Trenton/Mercer County, N.J. Boys & Girls Clubs of Pawtucket, Alfred Elson, Jr. Branch, R.I.
Pacific	Fort Wainwright Youth Services, Alaska Boys & Girls Club of Carlsbad, Village Unit, Calif. Boys & Girls Club of Tustin, Calif. Mountain Home AFB Youth Center, Idaho	Boys & Girls Clubs of Whatcom County, Bellingham Unit, Wash. Boys & Girls Clubs of Naval Base Kitsap, Jackson Park Youth and Teen Center, Wash.
Southeast	Boys & Girls Clubs of Nash/Edgecombe Counties, Lucy Ann Bodie Brewer Unit, N.C. Boys & Girls Clubs of Mitchell County, Ga. Boys & Girls Clubs of Escambia, Fla. Boys & Girls Clubs of Wayne County, N.C.	Boys & Girls Club of Marion County, Fla. Boys & Girls Clubs of Greater Lee County, Potter-Daniel Boys & Girls Club, Ala.
Southwest	Boys & Girls Club of Craig, Colo. Boys & Girls Club of Ottawa County, Okla. Boys & Girls Clubs of Greater Fort Worth, East Side Branch, Texas Boys & Girls Club of Vernon, Texas	Boys & Girls Club of Corpus Christi, Boys & Girls Club of Corpus Christi, Texas Boys & Girls Club of Topeka, Auburn, Kan.

Table 1.2 shows the demographic characteristics of the set of treatment and control Clubs participating in the study compared to national Club statistics. Treatment Clubs were slightly lower minority status than control Clubs or Clubs nationally, and somewhat older in their membership. Clubs in both treatment and control conditions were larger (by about 100 members) than Clubs nationally.

TABLE 1.2: Club Demographics for Treatment Sites, Control Sites and Total Club Sites

Membership Characteristic	Treatment Clubs *N=20*	Control Clubs *N=10*	Study Clubs |*N=30*	National Clubs *N=3,275*
Male	55.1%	57.9%	56.1%	55.2%
Minority (including Asian, African-American, Hispanic, Native American, and Multi-racial)	54.0%	67.4%	58.9%	67.6%
Receiving Free or Reduced Lunch	59.6%	68.7%	62.8%	63.6%
Ages 12 and or Under	66.2%	77.2%	70.1%	72.0%
Average Number of Club Memberships	751	702	733	635

Youth Sample

The population of youth from which the sample for the study was obtained consisted of all youth aged 9-14 attending the 30 Clubs in the study (20 treatment, 10 control) during March of 2006 for a total of 2,242 youth. At baseline, two-thirds of the youth in the study sample were in the 9-11-year-old age group. Most of the youth in the study are minority (58.9 percent), with the largest group of youth being African-American (36.5 percent).White youth make up approximately 31 percent of the sample, while Hispanic youth and other racial groups make up 11 percent and 21 percent of the sample respectively. Slightly more than half of the sample is male (56.1 percent).The vast majority of youth in the study report they are doing fairly well in school (Cs and higher, 86 percent).With respect to Club attendance, the majority of youth report they have attended their Club for a year or more (67 percent), with nearly 40 percent attending the same Club for three years or more. The youth also report they attend the Club frequently, with 84 percent of the youth reporting that they attend a few times a week or every day.

Because of typically high mobility rates in and out of the Clubs (up to two-thirds of the youth stay less than two years) and seasonal attendance for sports and other activities, a stable sample of youth across 22 months is difficult to obtain. Because of these issues, the final sample was determined to be all youth who (1) participated in Club activities for the full time of the study,

and (2) completed each of the three survey administrations. Because the study focused on change over time, the final sample for analysis consisted of the youth who were involved in the Clubs for the duration of the study.

A total of 727 youth (32 percent of the total youth population between ages 9-14) completed surveys at three designated times throughout the study. While we did have data for additional youth from the baseline and final survey – but not the midpoint survey – we chose to use the youth in the sample with the fullest set of data. Our analyses showed no bias in this smaller group of youth when compared to all youth who started the study. This allows us to look at trends over three points in time.

Data Collection Methods

The study spanned 22 months and consisted of three major data collection activities:

- **Youth surveys** were administered three times across the course of the study.Youth surveys were conducted at the beginning of the study (baseline), mid-way through the study and at the end of the study, to assess the impact of Triple Play on changes in youth outcomes and experiences at the Clubs. The baseline survey was administered in March 2006, the mid-survey was administered in December 2006 and the final follow-up survey was administered in December 2007. Club staff administered the survey (in paper-pencil form) by reading the questions to the youth in a group setting during the designated survey week. The research team trained Club staff in survey administration procedures.

- **Implementation site visits** were conducted with a subset of Triple Play Clubs once in the first year and once in the second year. In the first year, the Clubs selected for implementation site visits were those that appeared to have made the most implementation progress based on a review of the quarterly implementation reports and discussion with the national staff members most familiar with each Club. Clubs identified as making significant progress were selected across the five regions. In the second year, Clubs were selected for site visits based on their level of improvement in youth outcomes from the baseline to the mid-point survey. Site visits included observation of Triple Play and general Club activities, interviews with key staff and focus groups/interviews with youth. A total of 10 sites were visited in Year 1 and a total of nine sites were visited in Year 2. Site visits were conducted in the fall of each study year.

- **Quarterly implementation reports** were provided by each Triple Play site, detailing participation, activities and other factors related to Triple Play.

Measures

The surveys collected data on the following measures (see **Appendix A: Technical Report** for a complete description of each set of measures and their psychometric properties):

- **Background and participation information**, including demographic characteristics of gender, race, ethnicity and age; frequency and length of participation in the Club; and self-reported grades in school;

- **Knowledge of healthy eating** – portion sizes, number of calories and nutrient values in specific foods;

- **Healthy eating behavior** – frequency of eating breakfast in the last week and food diary for the previous day;

- **Levels of physical activity** – exercise/physical activity at the Club in the last week and number of hours of physical activity overall in the last week;

- **Sense of mastery and control** over general life events;

- **Quality of relationships with peers** – communication, conflict, receipt of instrumental (practical) support and receipt of emotional support;

- Five aspects of the **developmental quality** of youth's experience during participation at the Clubs: supportive relationships with adults; sense of safety; youth involvement in decision-making and leadership; skill building; and community involvement; and

- **Support for healthy habits**, including exposure to Triple Play programming components, peer supports for healthy behavior and types of snacks/foods served at the Club in the last week.

Data collected on site visits to 10 treatment Clubs in November/December 2006 and in November/December 2007 were used to create qualitative measures of the supports for and barriers to implementation: adequacy of training and resource materials; perceptions of staff and youth on the value of Triple Play; and the quality and relevance of Triple Play activities including instruction strategies, engagement of youth, role of youth and expectations. Quarterly reports from the Clubs were used to collect data on Triple Play program offerings, participation levels and outreach and retention efforts.

Data Analysis

The data were analyzed using methods that allowed us to: (1) look at the change in trends over time for the overall study group and subgroups to assess impact; and (2) to take into account the unique characteristics shared by youth in the same Club. Youth in the same Club can be expected to be more similar to each other because of their common Club experience than they are to youth in other Clubs. The analytic methods used here take this into account. The results also have as control variables: gender, ethnicity, participation level at the Club and the baseline level of the variable of interest. This means when an "impact" is estimated, we statistically remove the differences based on these other factors in order to get a more precise estimate of the effect of Triple Play alone. A more detailed description of the analysis method can be found in **Appendix A: Technical Report and Study Methodology**.

Reading Results

Each of the outcome sections begins with a summary table showing where there are significant program impacts on the outcome measures. For each outcome listed in the table, we indicate whether or not there was a significant impact by including an ↑, an ↗, ↓, or an ↘ symbol. A blank cell indicates that there was no impact detected in the study (i.e., knowledge of specific nutrients in Table 1.3).Table 1.3 shows an example of how to read the results.

Table 1.3: Example Impacts of Triple Play on Nutrition Knowledge and Healthy Eating Behavior (All Youth)

Nutrition Knowledge		Healthy Eating Behaviors	
Outcome Measure	**Impact**	**Outcome Measure**	**Impact**
Total nutrition knowledge	↗↗	Number of healthy foods eaten previous day	↓
Knowledge of portion control	↑↑	Number of fruits and vegetables eaten previous day	↘
Knowledge of specific nutrients		Number of days eating breakfast in previous week	↗

A ↑ indicates that Triple Play produced a positive impact on outcomes either by increasing the positive levels or reducing negative levels for youth in Triple Play Clubs compared to the control Clubs – for example, a ↑ for portion control means that youth in Triple Play Clubs gained more knowledge than did their peers in control Clubs.

A ↗ means that Triple Play had a positive impact by maintaining a baseline outcome level for youth in Triple Play Clubs while the level for control Club youth dropped. For example, youth may typically show a drop in eating breakfast as they age – if the impact of Triple Play is indicated with a ↗, then Triple Play youth did not decline in their breakfast eating, and control

youth did decline in the frequency of eating breakfast.

A 🡻 indicates that Triple Play produced negative changes (or increased negative outcomes) for youth in Triple Play Clubs compared to the control Clubs – for example, a 🡻 for number of healthy foods would mean youth in Triple Play Clubs declined in the number of healthy foods they ate more than their peers in control Clubs.

A 🡾 means that Triple Play had a negative impact on youth by showing declines for Triple Play Clubs relative to control Club youth who did not decline. For example, youth might typically show a drop in eating fruits and vegetables as they age – if the impact of Triple Play is indicated with a 🡾, it would mean Triple Play youth ate fewer fruits and vegetables, and control youth continued to eat about the same amount of fruits and vegetables.

In some cases, the impact for Triple Play is stronger than in others. Therefore, to represent an impact that is strong, compared to one that is small or moderate, double symbols are presented in the summary table. For example, if the impact of Triple Play is strongly positive for total nutrition knowledge, we would represent that impact with two upward-facing arrows, or 🡹🡹 (i.e., portion control in Table 1.1). Similarly, if the impact of Triple Play is strongly positive by stopping a typical developmental decline, we would represent that impact using two diagonal upward-facing arrows or 🡽🡽 (i.e., total nutrition knowledge in Table 1.1). A similar notation is used for the negative impacts.

Impacts are represented in two ways in the body of the report. First, for many outcomes, average differences are represented as the difference in percentage changes for Triple Play youth versus control youth. In this case, specific percentage point difference intervals have been designated as small, moderate and large impacts and the size of the impact represents an average difference in Triple Play and control youths' baseline to follow-up level on outcomes (from beginning to end of study)[2]. For example, if the average change for Triple Play youth in nutritional knowledge is 10 percentage points and the average change for control youth is 2 percentage points, the estimate of impact is 8 percentage points (10 minus 2) in favor of Triple Play.

For average outcomes not represented in percentages, impacts represent an average standardized difference in the outcome for the treatment (Triple Play) versus control youth. For example, if

[2] *Decisions about what would be a large, medium and small difference were based on academic standards. The effect size intervals were calculated based on Cohen's recommendations for small, moderate and large effect sizes (using the eta-squared statistic) (Cohen,1998) and were translated into percentage changes for each interval. Researchers have found that often time small differences, which were often discounted because they were small, may be quite important in educational settings, especially when the programs being examined differ in their implementation and other programs may also contribute to the differences being looked at.To be able to find a reliable difference, even if it is small, may have practical implications for improving practice and making programmatic decisions (Hill, Bloom, Rebeeck-Black, & Lipsey, 2007).*

Triple Play youth report increasing their consumption of fruits and vegetables by two per day, and control youth report an increase of one per day, the difference between the two (one additional fruit or vegetable) would be an estimate of the impact in favor of Triple Play.

Structure of the Report

The report is structured so that the reader can examine each set of outcomes and analyses separately. The remainder of the report presents the findings of the study, organized by outcome area, followed by a discussion of subgroup analyses. The first set of results focuses on the impact of Triple Play on nutrition knowledge and on healthy eating. Second, the discussion turns to the impact of Triple Play on physical activity levels – with respect to the overall amount of time spent in physical activity and the degree to which youth are meeting benchmark standards for amount and type of physical activity. Next, the report examines the degree to which positive peer relationships and a strong sense of mastery and control are influenced by participation in Triple Play. Once all the impact of Triple Play has been examined for all of these outcomes, we turn our attention to the impacts for various subgroups, including males and females, minority and non-minority youth, and older and younger youth. Finally, the results sections end with a discussion of Club-level outcomes.

Within the discussions of each outcome, we first provide a brief orientation to the research literature, followed by a discussion of overall impacts. Important trends and differences are then highlighted and discussed for each outcome area for youth who started out high and low on the outcome measures. This approach of examining the movement out of low or "risk" levels of outcomes and movement into more "high" levels of the outcome allow us to pinpoint more closely the specific youth that Triple Play may be having the strongest impact for. Finally, the discussion of each outcome concludes with observations about the specific Triple Play components and their relationships to positive or negative outcomes. This discussion includes insights from our qualitative data, as well as descriptive data about the level of exposure youth report having to the various components of Triple Play. These data explore what kind of practices may potentially help achieve or impede the effects that are found.

CHAPTER 2: IMPACTS ON YOUTH NUTRITION KNOWEDGE AND BEHAVIOR

"[In Triple Play] we talk about how to be healthy, grades, goals. Healthy Habits teaches us to stay healthy and what types of foods to eat, like one portion of meat, two veggies and something to drink." – Jasmine, age 12

This section examines the degree to which Triple Play improves nutritional knowledge, healthy food choices and the likelihood of eating breakfast regularly. The program seeks to promote these improved outcomes through two main avenues – the Healthy Habits curriculum and through providing nutritious options for youth while they are at the Club. The Healthy Habits curriculum is designed to improve young people's knowledge about the food pyramid, portion sizes, hydration, important nutrients in foods and about how to make healthy food choices and eating decisions through both instruction and hands-on activities. Clubs also foster healthy eating choices by changing the foods offered to youth – providing more healthy snacks and meals and making vending machine choices healthier for youth.

Table 2.1 summarizes the nutrition and healthy eating behaviors for which Triple Play had an impact. The five key findings related to nutrition and healthy eating behaviors are:

- *Triple Play improves youth nutrition knowledge*, particularly in the area of portion control, but does not appear to impact knowledge of specific nutrients and their value.
- *Triple Play slows – or prevents – the typical developmental decline in eating healthy foods*; Triple Play youth show smaller or no drops in the number of healthy foods and the number of fruits and vegetables eaten over the course of the study, while control youth show significant declines in both outcomes.
- *Triple Play has little or no impact on the overall frequency of eating breakfast* – youth in Triple Play and control Clubs show declines in the frequency of eating breakfast over the course of the study.
- *Triple Play benefits <u>both</u> youth who already eat healthy and those with unhealthy eating habits.* This impact is strongest for the youth who have the least healthy eating habits.
- *Triple Play benefits youth who start out eating breakfast infrequently the most*.

Table 2.1: Overall Impacts of Triple Play on Nutrition Knowledge and Healthy Eating Behavior (All Youth)

Nutrition Knowledge		Healthy Eating Behaviors	
Outcome Measure	**Impact**	**Outcome Measure**	**Impact**
Total nutrition knowledge	↑	Healthy foods eaten previous day	↗
Knowledge of portion control	↑	Fruits/vegetables eaten previous day	↗↗
Knowledge of specific nutrients		Days eating breakfast previous week	

Key Finding 1: Triple Play improves youth's nutrition knowledge.

Nutrition knowledge levels are generally low among children and adolescents, who have a weak understanding of the connection between food choice, physical activity and health (Krebs-Smith, Heimendinger, Patterson, Subar, Kessler, & Pivenka, 1995; Walt & Shellam, 1997). Food preference, rather than food knowledge, has been a consistent predictor in the food choices that children and youth make (Shepherd, Harden, Rees, Brunton, Garcia, Oliver, & Okaley, 2006). They tend to show a lower preference for healthy food, such as fruits and vegetables, which tends to decrease their choices of these foods; and a higher preference for fatty or salty foods, which is associated with higher consumption of unhealthy foods.

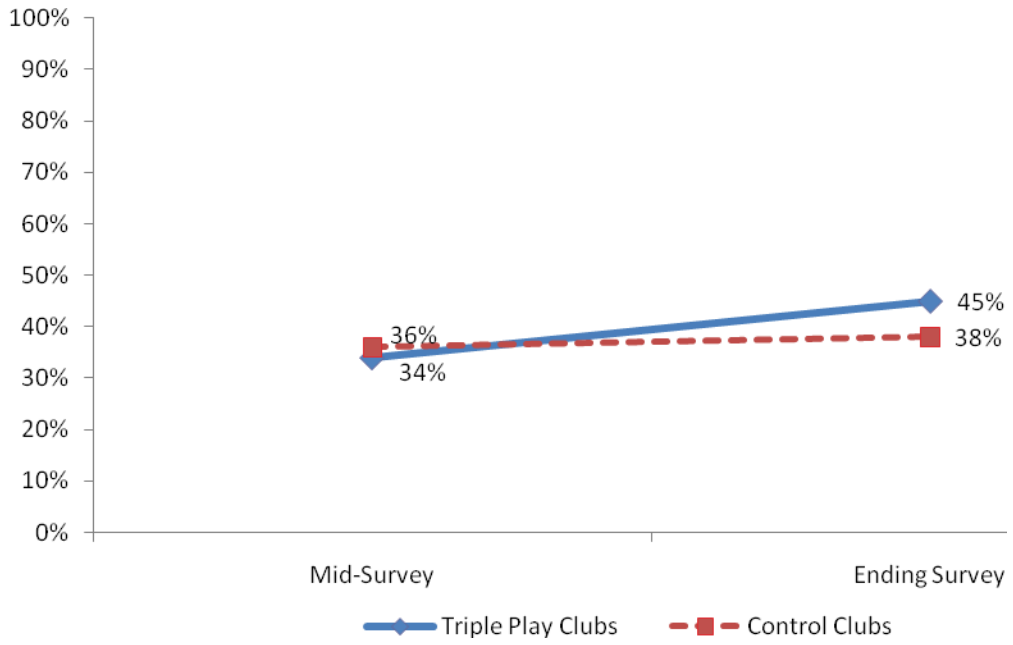
To assess whether or not Triple Play had any impact on youths' knowledge of nutritional content, questions were included on the survey to measure some of the concepts included in the curriculum[3]. A total knowledge score (percentage correct) was calculated for the mid-survey and for the final survey responses across all seven knowledge items. In addition, the items were grouped into two sets – three items assessing knowledge of portion size, and four items assessing knowledge of nutrients. Impact was assessed from the mid-survey to the final survey in order to have comparable measures at both times[4].

[3] *Changes to the knowledge measure were made after the baseline survey because virtually all youth (treatment and control) knew the correct answers to the questions about the food pyramid. Additional questions were added to the mid-survey about portion sizes and important nutrients in foods. For these additional questions change was measured from the mid-point survey to the final survey (a one year period), while the questions that were consistent across baseline, mid and ending survey were analyzed at all three survey points. The impact on the new knowledge questions may be understated—because exposure to Healthy Habits is likely to have occurred prior to the first measurement of knowledge with these questions. This would lead to a higher baseline score, making it harder to show improvement at the final survey.*

[4] *Only two items from the baseline survey were asked at the mid-survey and final survey, therefore, the measures of knowledge were highly disparate from baseline to mid-survey. We decided then to only analyze change from mid-survey to final survey, in spite of the challenge of having no true basely ne measure. Because of these limitations, the results should be interpreted with caution.*

Triple Play appears to have a small but positive impact on youths' nutritional knowledge – overall, and for specific knowledge related to portion sizes. There was no impact on knowledge of nutrients provided by select foods. Figure 2.1 shows the change in overall knowledge scores for Triple Play and control Club youth and Figure 2.2 shows the significant impact of Triple Play on youths' knowledge of portion sizes[5].

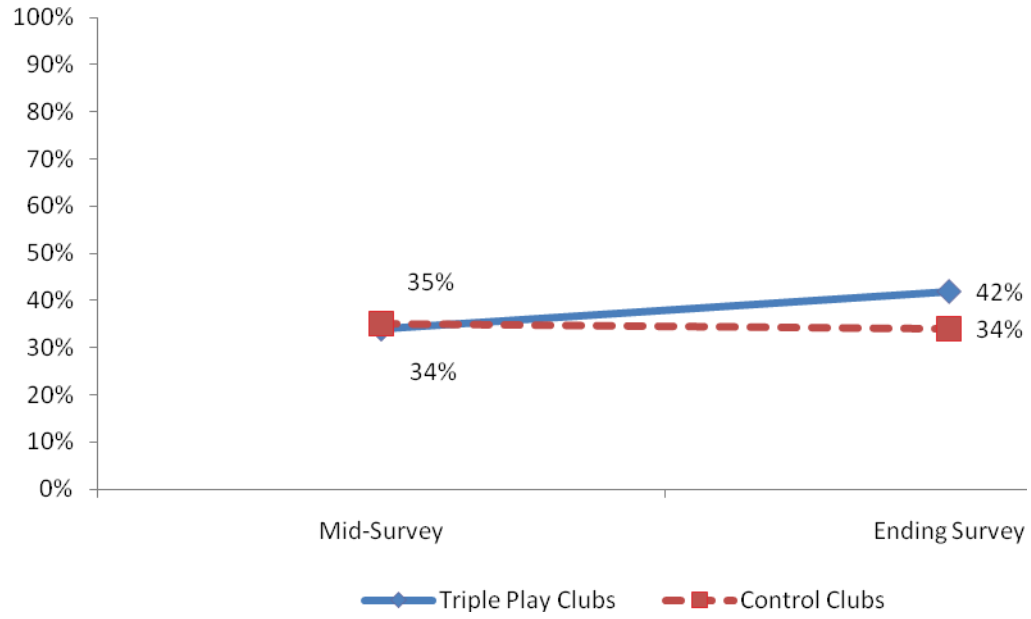
FIGURE 2.1: Impact of Triple Play on Overall Nutritional Knowledge



Note: Triple Play youth, N = 507; Control Club youth, N = 220

[5] *Mean levels and standard deviations for each outcome are reported in Appendix B.*

FIGURE 2.2: Impact of Triple Play on Knowledge of Food Portion Size



Note: Triple Play youth, N = 507; Control Club youth, N = 220

Youth in Triple Play Clubs increased from 34 percent to 45 percent in the percentage correct across all seven knowledge items (gain of 11 percentage points), while control Club youth increased slightly from 36 percent to 38 percent (a gain of 2 percentage points) for a differential gain for Triple Play youth of 9 percentage points. For portion size knowledge, Triple Play youth increased from 34 percent correct to 42 percent correct (an 8 percentage point gain), while control Club youth decreased from 35 percent correct to 34 percent correct (a loss of 1 percentage point) resulting in a positive impact of Triple Play of 9 percentage points.

Key Finding 2: Triple Play slows – or prevents – the typical developmental decline in eating healthy foods.

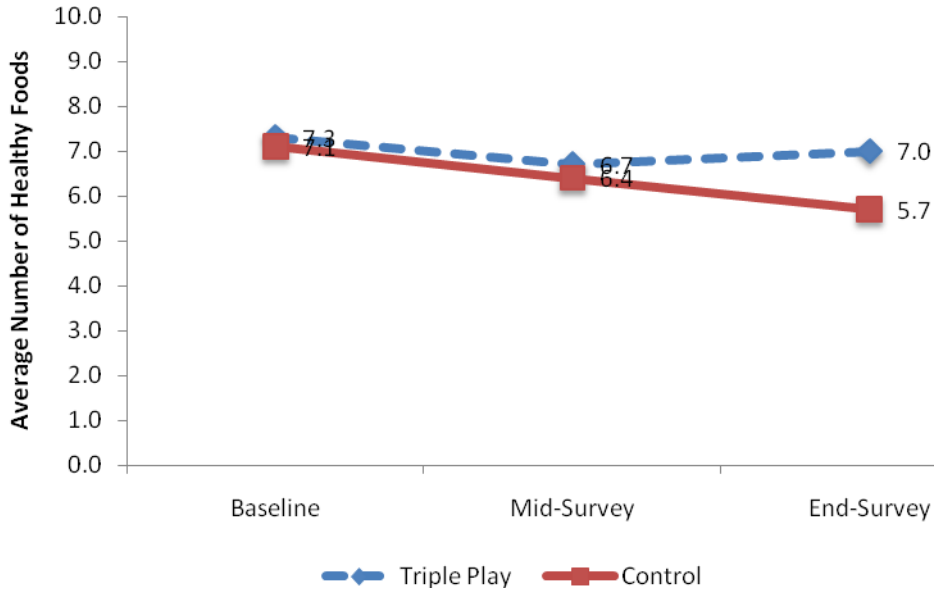
Several survey studies of children's eating behavior suggest that few children meet dietary recommendations (Levine & Guthrie, 1997; Basiotis, Carlson, Gerrior, Juan, & Lino, 2002; Munoz, Krebs-Smith, Ballard, & Cleveland, 1997, 1998; Neumark-Sztainer, Story, Resnick, & Blum, 1996; Suitor & Gleason, 2002; Wilkinson, Mickle, & Goldman, 2002). In particular, children and adolescents eat too little fruits, vegetables and milk products, and eat too many high-fat, high-sugar snack foods without many nutrients. In general they consume too much fat and saturated fat. Overall dietary quality declines with age and snacking behaviors increase as children go from elementary into higher grades (Basiotis, et al., 2002). Girls are more at risk for

having unhealthy eating patterns, particularly adolescents, than are boys (Levine & Guthrie 1997).

To assess food choices the survey contained a food diary[6] for youth to complete for each meal and their snacks the previous day. From this diary we computed the number of different types of food they had eaten including "healthy" foods (like whole grains, fruit and lean proteins – see Appendix A for the full list) and the number of fruits and vegetables.

On average, by the end of the study period youth in Triple Play Clubs ate significantly more healthy foods in a day than those in treatment Clubs (7 vs. 5.7).For Triple Play youth the trend shows a drop in the number of healthy foods eaten the day before from baseline to the midpoint survey but an increase between midpoint and final survey. For the control youth this number continued to drop over the study period (see Figure 2.3). This drop without intervention is not surprising given that youth gain more control over their food choices and use of any discretionary spending as they age.

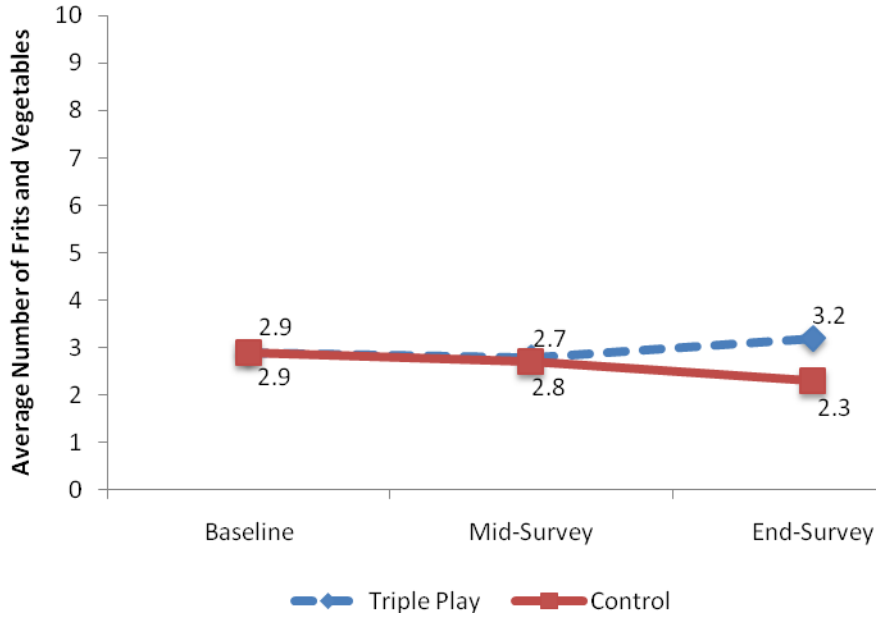
FIGURE 2.3: Impact of Triple Play on Number of Healthy Foods Eaten



Note: Triple Play youth, N = 507; Control Club youth, N = 220

[6] *Food records are commonly employed in nutritional research and tend to be more accurate than other methods of dietary assessment (Ambrosini, et al., 2002; Gersovitz M, et al., 1978; Weber, Lytle, & Gittlesohn, 2004), particularly when used with children and adolescents. Further, shorter time frames (like a few days) yield more accurate data than longer time frames (like a week).*

FIGURE 2.4: Impact of Triple Play on Number of Fruits and Vegetables Eaten



Note: Triple Play youth, N = 507; Control Club youth, N = 220

We also looked specifically at the number of fruits and vegetables eaten by youth since the "five a day" message is a very prominent one (Krebs-Smith, et. al, 1995, Nicklas, Johnson, Myers, Farris, & Cunningham, 1998). Figure 2.4 shows that Triple Play also reduces the decline in the number of fruits and vegetables consumed by youth, and actually reverses this trend slightly for youth in Triple Play Clubs. At baseline both Triple Play Club and control Club youth ate an average of 2.9 fruits or vegetables the day prior to the survey; by the end-survey, that number had increased to 3.2 for Triple Play youth but dropped to 2.3 for control Club youth.

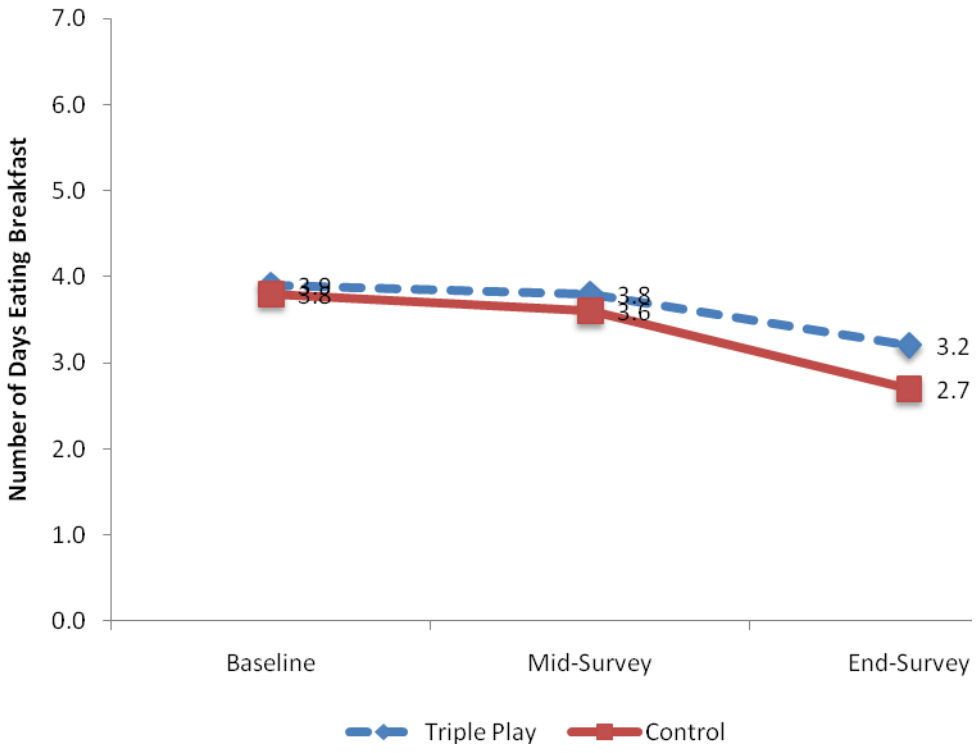
Key Finding 3: Triple Play has little or no impact on the overall frequency of eating breakfast.

The rate of breakfast skipping also increases as children move into adolescence (Levine & Guthrie, 1997; Basiotis, et. al., 2002; Murphy, Pagano, Nachimani, Sperling, Kane, & Kleinman, 1998; Wilkinson, et. al., 2002). Children who do not eat breakfast regularly are less likely to have nutritious diets than those who do eat it regularly (Evers, Taylor, Manske, & Midgett, 2001; Nicklas, Bao, Webber, & Berenson, 1993). Not eating breakfast in early adolescence is a significant predictor of weight problems in later adolescence (Neumark-Sztainer, Paxon, Hannen, Haines, & Story, 2006). According to the American Dietetic Association, children who eat a healthy breakfast are more likely to have better concentration, problem-solving skills and

eye-hand coordination (DeJong, van Lenthe, van der Horst, & Oenema, 2009; Levine & Guthrie, 1997; Nicklas, et. al, 1993). The State of Minnesota Breakfast Study showed that "students who ate breakfast before starting school had a general increase in math grades and reading scores, increased student attention, reduced nurse visits, and improved student behaviors" (Neumark-Sztainer, et. al, 2006).

Figure 2.5 shows the frequency of eating breakfast for Triple Play and control Club youth.Overall we found no evidence that youth at the Triple Play Clubs ate breakfast more frequently than youth at the control Clubs (see Figure 2.5).The number of days eating breakfast dropped over the study period for all groups, but dropped at a slower rate for some Triple Play youth than it did for youth at control Clubs.

FIGURE 2.5:Impact of Triple Play on Frequency of Eating Breakfast



Note: Triple Play youth, N = 507; Control Club youth, N = 220

Key Finding 4: Triple Play benefits both youth who already eat healthy, as well as those with unhealthy eating habits.

A second question that guided the study was to examine if potential effects of Triple Play applied generally to all youth or if it had differential effects on youth depending on whether they had healthy eating habits at the beginning of the study or were already at risk in regard to their eating behaviors. To address this question, analyses were conducted to examine the impact of Triple Play for two subgroups – those who reported healthy eating patterns at baseline, and those who reported more at-risk levels of unhealthy eating patterns at baseline. Youth were categorized into high and low groups by setting a threshold for an at-risk health related behavior (e.g., eating less than two healthy foods a day, eating breakfast less than two days a week) and for positive heath related behaviors (such as eating at least two healthy foods per meal, eating breakfast a minimum of five days a week).These groupings allow an examination of whether Triple Play is: a) helping more at-risk youth make positive changes in their behaviors while the healthy youth remain the same; b) helping the Triple Play youth already engaged in healthy behaviors to continue to do so while the control youth decline with no real impact for less healthy youth; or if c) both groups benefit.

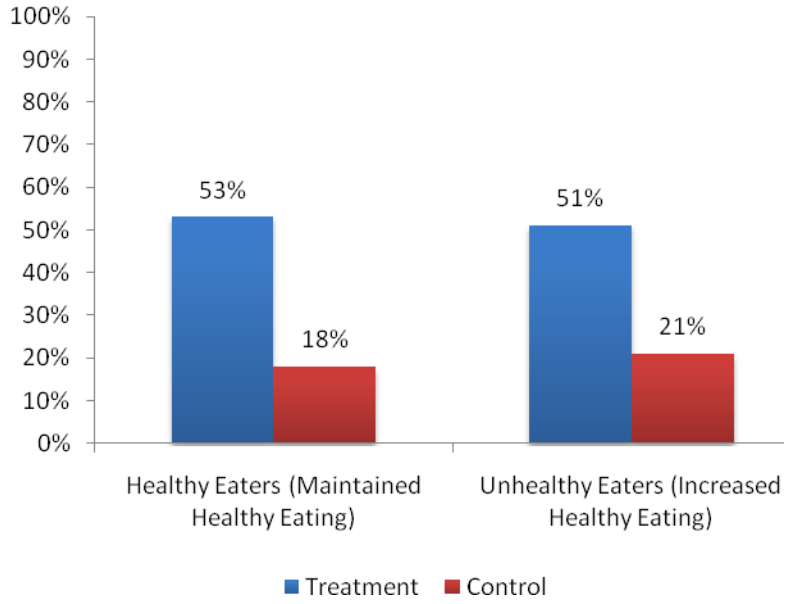
At baseline, about the same percentage of youth in the Triple Play and control Clubs reported eating a significant number of healthy foods daily. Sixty-one percent of Triple Play youth reported eating an average of at least two healthy foods per meal, compared to 55 percent of control group youth, suggesting the two groups were quite similar in their eating habits related to eating healthy foods at the beginning of the study.

Triple Play had a strong positive impact for youth who were already healthy eaters in helping them maintain their healthy eating habits relative to their control group peers.About half (53 percent) of Triple Play healthy eaters maintained their level of eating healthy foods every day compared to only 18 percent of control group healthy eaters. Triple Play also has a strong positive impact in improving eating patterns for those who started the study with less healthy eating habits (see Figure 2.6).At final follow-up, 51 percent of Triple Play unhealthy eaters had improved their eating habits compared to only 21 percent of the unhealthy eaters in the control group.

Key Finding 5: Triple Play does benefit youth who start out eating breakfast infrequently.

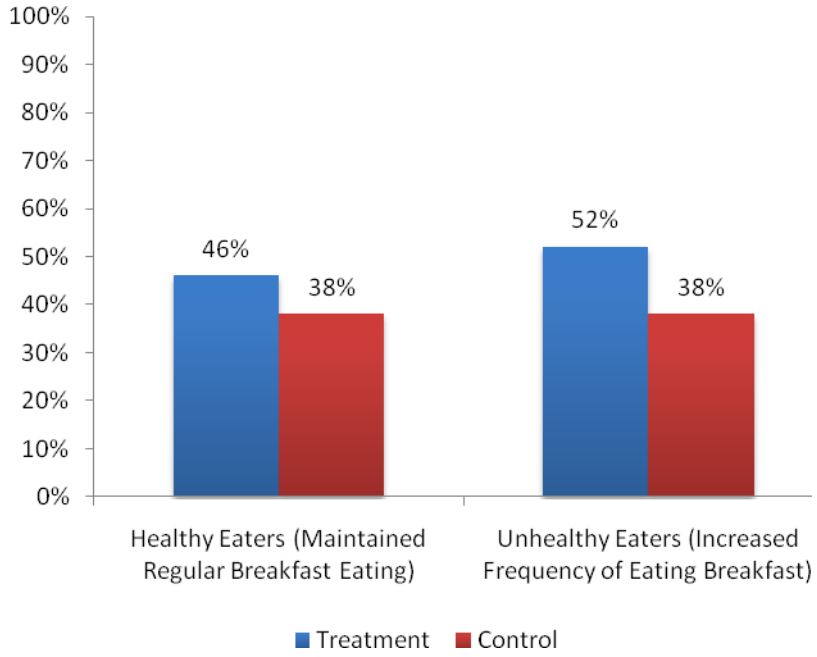
While there was no overall impact on breakfast eating, Triple Play did have a significant positive impact on those who did not start out with healthy breakfast eating patterns, for example, youth who ate breakfast less than two days a week (see Figure 2.7). Approximately 52 percent of the Triple Play infrequent breakfast eaters ate breakfast more often by the end of the study compared to 38 percent of control group infrequent eaters. Triple Play also had a small positive impact for youth who already ate breakfast regularly in helping more of them maintain their healthy eating habits relative to their control group peers (46 percent vs. 38 percent, respectively).

Figure 2.6: Changes in Healthy Food Consumption for Less and More Healthy Eaters (at Baseline)



Note: Triple Play healthy youth, N = 309 and unhealthy youth N = 198; Control Club healthy youth, N = 120 and unhealthy youth N = 100 at baseline.

Figure 2.7: Changes in Frequency of Eating Breakfast for Less and More Healthy Eaters (at Baseline)



Note: Triple Play healthy youth, N = 239 and unhealthy youth N = 268; Control Club healthy youth, N = 99 and unhealthy youth N = 121 at baseline

What Aspects of Club Implementation of Triple Play Improve Nutritional Knowledge and Healthy Eating Behavior?

The Healthy Habits curriculum focuses on improving nutritional knowledge by educating youth about the value of different nutrients, portion sizes, making healthy food choices and the food pyramid. Second, the type of food provided to youth at the Club can influence eating behavior – through the modeling of appropriate food choices. This section first explores whether or not changes in healthy eating are related to (1) the amount of youth's exposure to the Healthy Habits curriculum[7]; and (2) the degree to which the Club provides healthy snacks[8]. This is followed by qualitative data on exemplars and challenges in the Club setting to illustrate implementation of Healthy Habits and how Clubs worked to change norms around eating healthy foods.

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[7] Youth were asked how often they participated in the Healthy Habits curriculum at the Club.Responses ranged from 1 (Never) to 4 (Almost Always).Exposure to the Healthy Habits curriculum was estimated by taking the average across youths' responses to this question at the mid-survey and the ending survey.Youth who averaged 2 or less on this combined response were classified as having low exposure to Healthy Habits, and youth who averaged more than 2 were classified as having high exposure to Healthy Habits.

[8] Snacks were designated as mainly healthy if youth reported receiving healthy snacks at least two-thirds of the time (on average) across the study).

The following analyses are based only on Triple Play Clubs and youth since it focuses on implementation. Participation data come from the youth survey since there was no practical system for staff to collect daily data over the study period on youth's involvement across the multiple activities that comprise Triple Play.Thus, the results presented here represent a first look at what level of participation is needed to achieve the desired impact on youth outcomes.A more detailed examination of this issue would require more refined participation data.

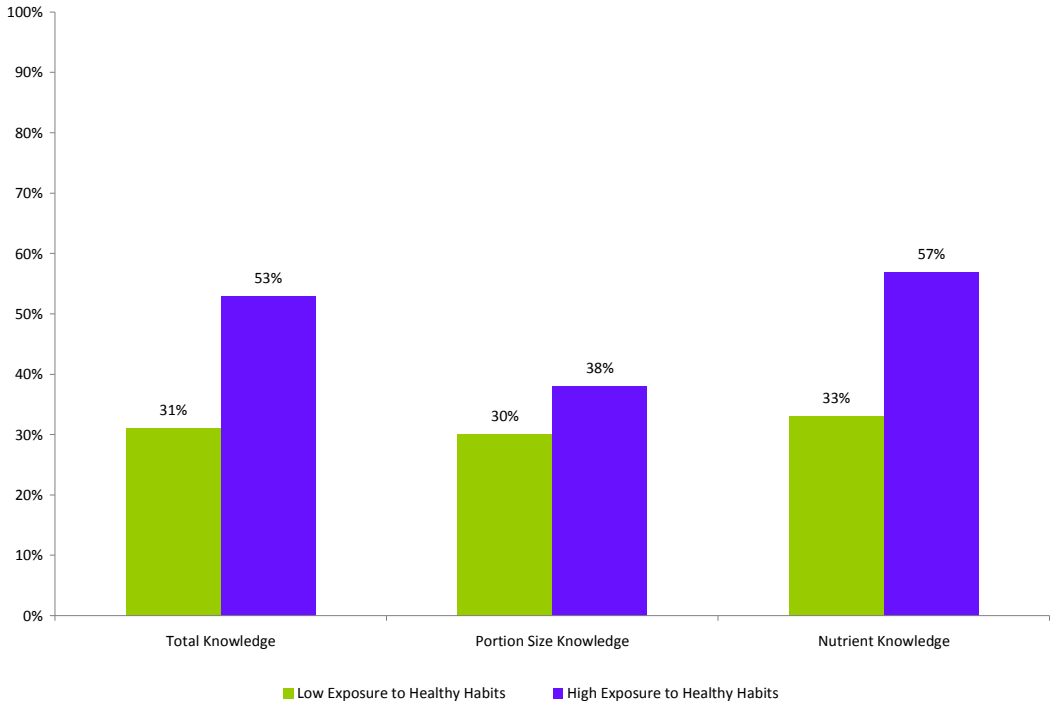
Healthy Habits Curriculum

One would expect that the Healthy Habits component of the Triple Play program is most likely to correlate with changes in youths' eating behaviors since it focuses on increasing their understanding of what constitutes healthy eating and changing behavior around making healthy food choices. To define high and low levels of participation, we categorized youth's responses to how often they participated in Healthy Habits sessions: youth who indicated they attended at least two sessions a week were classified as having higher exposure to Healthy Habits; youth who indicated they attended Healthy Habits sessions once a week or less were classified as having lower exposure to Healthy Habits. While this classification does not address the specific amount of exposure needed to have a positive impact with Triple Play, it does allow us to examine whether or not frequency of participation can make the impact stronger.

Figure 2.8 shows that youth who report having a higher exposure to Healthy Habits learned considerably more than those with less exposure to Healthy Habits. Specifically, youth who participate in Healthy Habits are more likely to know: more about nutrition in general (53 percent versus 31 percent); more about portion sizes (38 percent compared to 30 percent); and more about nutrients (57 percent versus 33 percent). These results suggest that if youth participate in Healthy Habits on a regular basis (multiple times a week) the positive impacts reported above are stronger than for youth who have less exposure – suggesting that more frequent sessions are more effective.

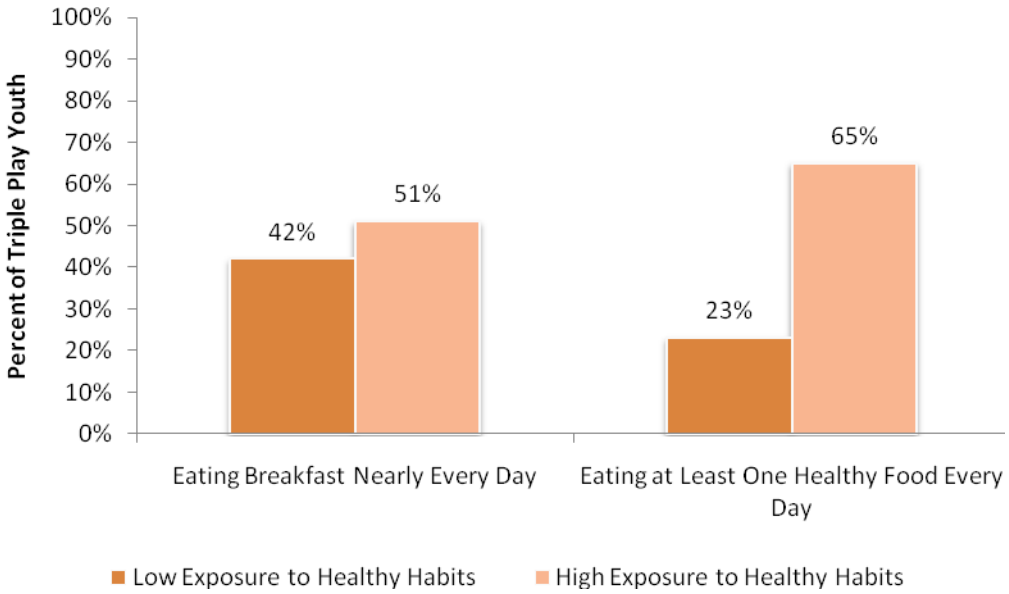
Similarly, the relationship between Healthy Habits participation and both the number of healthy foods eaten and the frequency of eating breakfast shows that Triple Play youth with higher exposure to Healthy Habits (at least twice a week) are about three times more likely to eat more healthy foods and are somewhat more likely to eat breakfast more frequently (51 percent versus 42 percent) (See Figure 2.9). Sixty-five percent of youth who reported more exposure to Healthy Habits said they ate healthy foods at least once a day and 51 percent reported they ate breakfast nearly every day compared to 23 percent and 42 percent of youth who had lower exposure to Healthy Habits.

FIGURE 2.8: Relationship of Exposure to Healthy Habits Curriculum and Nutrition Knowledge



Note: Low Exposure, N =145; High Exposure, N = 362

FIGURE 2.9: Relationship of Exposure to Healthy Habits Curriculum and Healthy Eating Behaviors



Note: Low Exposure, N =145; High Exposure, N = 362

Challenges in Implementing Healthy Habits in the Club

Even though more participation in the Healthy Habits component seems to produce more nutritional knowledge and better eating habits, implementation of the curriculum across Clubs was somewhat uneven and subject to many challenges. These challenges are described below and include developing good instructional techniques that engage youth, having experienced staff members available to implement the program and structuring a consistent rotation of the curriculum to make it available to all youth.

The most fundamental challenge for Triple Play Clubs was implementing the Healthy Habits curriculum in a way that is attractive to youth. Focus groups with youth in several Clubs suggested that they, particularly older youth, did not always find the lessons engaging. Observations of some of the curriculum delivery showed that the lessons were often delivered in a lecture-style format with little emphasis on hands-on activities. Youth reported that the sessions were "too much like school." Several Clubs reported that they delivered the Healthy Habits curriculum primarily to their younger members as the older members were not interested and would not participate.

However, not all Clubs experienced this difficulty. Some innovative methods of engaging youth were reported or observed. Hands-on activities such as cooking healthy recipes, trips to the grocery store, menu planning or games related to making healthy food choices were popular. For example, an Education Director at one Club who minored in Food and Nutrition as an undergraduate delivers the Healthy Habits curriculum working with about 20 6- 9 year olds twice a week. She described the curriculum as a way to "…dispel myths and get accurate information about food and nutrition to kids." Here youth participate in a range of activities including online games, poster making (their work can be found on the walls of the Club's Education Room), cooking and high-energy information exchange.

Some Clubs offers age-segmented sessions allowing staff to tailor the curriculum to accommodate the knowledge and developmental levels of each group. At one Club, older members select a dish to prepare each week and go shopping to purchase ingredients. In addition to knowing how much of each ingredient they need to purchase in order to generate the number of servings they want to provide (which are, in turn, based on portion sizes), they also have the opportunity to seek out lower-calorie alternatives among the ingredients and to prepare the food in ways that require less fat or sugar.

A second significant challenge faced by Clubs is having staff experienced and knowledgeable enough to deliver the curriculum effectively. In one Club, the staff member in charge indicated

that he had never taught anything related to nutrition before and felt like he was only a half-step ahead of the youth. Other staff indicated that they often did not have the knowledge to go beyond what was in the formal curriculum to make the content more relevant to the specific youth they were teaching.

Clubs have creatively found solutions to provide support to inexperienced staff. For example, at one Club a local nursing student provides support through conducting additional health and nutrition activities in collaboration with the regular staff member. Other Clubs have tapped into community-wide health fairs and related activities as a way to augment the Healthy Habits curriculum and to bring guest speakers in for special events. This keeps the classroom-based effort lively and interesting, and provides staff with additional strategies for engaging youth around health-related topics. One Club, which experienced high turnover and lost its Healthy Habits staffer during the weeks prior to our visit, is working with a local doctor who has developed a similar curriculum that she delivers at community events and local schools. The Club is working with her to host a community health expo in its gym and, when she is available, she speaks to the Healthy Habits class. The Social Recreation Director has also pitched in to fill the gap until a Healthy Habits staff person can be hired.

Some Clubs indicated that regular implementation of Healthy Habits was difficult because of the number of other programs already incorporated into the daily schedule or rotation. There was considerable variation in the frequency of opportunities for youth to participate in Healthy Habits ranging from several times a week to only once every couple of weeks. Consequently, the percentage of youth who complete the curriculum ranges across Clubs from 20 percent to 75 percent.

Conversely, some Clubs built Healthy Habits sessions into their daily rotation. One Club built Healthy Habits into its daily rotation offering it every day after Power Hour. From 4:00- 4:15 p.m. during assembly, the Club uses the curriculum to engage all of the Club members in a discussion or activity related to that day's nutrition issue. During each subsequent day, the assembly starts off with staff checking for understanding/retention of the previous day's topic.

Clubs that were already providing a variety of health-related content prior to the arrival of Triple Play have integrated the curriculum into existing programming, thus expanding and enhancing this content area. For example, one Club already had local nursing students doing nutrition sessions for the youth and used the Healthy Habits curriculum to supplement those sessions. Another Club had partnered with the extension office at a local university prior to Triple Play to do nutrition sessions and Healthy Habits rounded out the existing programming.

Food Provided to Youth at the Club

The type of food provided to youth at the Club could influence youth's eating habits by modeling appropriate food choices. We examined whether or not healthy eating is related to the degree to which the Club provides healthy snacks. Snacks were designated as mainly healthy if youth reported receiving healthy snacks at least two-thirds of the time (on average) across the study. The results above suggest that youth who are exposed relatively frequently (two or more times a week) to the Healthy Habits curriculum have healthier eating behaviors. Interestingly, as shown in Figure 2.10, there was no significant relationship between whether or not the Club served mainly healthy or unhealthy snacks and whether or not youth reported eating more healthy food or breakfast more frequently. It is possible that what youth eat at the Clubs is not a strong enough influence to change their behavior. It is also likely that the challenges faced by Clubs in providing healthier food and vending choices prevented the kind of consistently strong implementation that would be needed to affect youth's behavior. These implementation issues are explored in the next section.

Implementing Healthy Food Choices at the Club

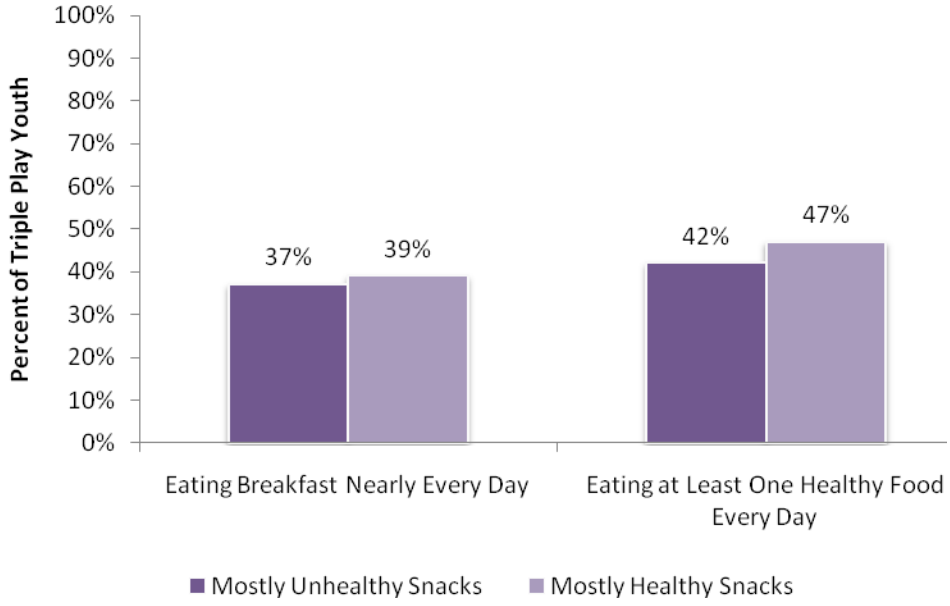
Modeling healthy eating choices for members is an important aspect of Triple Play. The two primary ways for Clubs to demonstrate good nutrition are through providing healthy snacks and meals for youth and by changing the offerings in the Club vending machines to healthier alternatives. Some Clubs use snack (or meal) time as an opportunity to convey messages about healthy eating to Club members – either directly by sharing information via posters on the snack room walls or signs indicating the snacks' nutritional content; or indirectly by serving smaller portions or serving healthier snacks without necessarily pointing to the nutritional benefit of the selections. The most significant barrier Clubs have faced in changing the quality of food they provide to youth is one of resources.

Many Clubs rely on local food banks as resources to provide snacks and, in some cases, hot meals – thereby relying on unpredictable ingredients. On any given day the food available for a snack or meal may not have the desired nutritional quality. But most youth come to the Clubs directly from school and arrive hungry. So faced with the choice between providing no food and less than ideal food to youth, the available food is served.

Nevertheless, some of the Triple Play Clubs we visited found ways to prepare the food that is available so that what they serve is consistent with what Healthy Habits teaches. Some effective strategies for providing more nutritious snacks on limited resources include the following:

Although one particularly outspoken Club member confided that, "Some of the kids don't bother taking it [snack], because it's usually healthy," the Club director did note that his Club has, over time, established a "really good relationship" with the local food bank, which is familiar with the intent of the Triple Play program, and therefore "does its best" to ensure that the Club receives healthy snack foods. The CPO also noted that during the summer prior to our visit the kids' favorite snacks were cantaloupe and watermelon – a new phenomenon.

FIGURE 2.10: Relationship of Exposure to Healthy and Unhealthy Snacks at the Club and Healthy Eating Behaviors



Note: Mostly Unhealthy, N =296; Mostly Healthy, N = 211

Another study Club we visited offers a snack and meal daily. This Club has been able to access funding through its state's after-school snack program. As a result, the snack foods adhere to state nutrition guidelines and are fairly healthy (e.g., fruit cups, crackers or Chex Mix-type snacks). A food distributor provides the dinner items at a cost, and the Club augments these with products from the local food bank. The Club focuses on preparing healthy and balanced meals from these combined sources, offering a fruit or vegetable, a "main course," bread and milk.

Some study Clubs have opted to simplify the entire snack process, making it somewhat easier to ensure nutritious snacks. One Club, for example, may offer a granola bar and juice, or a piece of fresh fruit. While the variety of options that some food banks offer may at times be limited, some study Clubs have found that most are likelier than not to have in-season fruit available, thus providing variety over time.

A significant challenge for many Clubs has been adjusting vending machine content. This has not always been easy – or popular – at Triple Play Clubs – as outside community members as well as Club members have balked at replacing sugar sweetened beverages, chips and candy with water, crackers, diet soda, dried fruit and granola bars. By providing these alternatives (rather than eliminating vending machines altogether), Clubs provide examples of tasty snack options and continue to collect the revenue that the machines provide. Approximately half of the Clubs

still had non-nutritious options in their machines, and some had no healthy options. Some strategies Clubs used to successfully transition the vending machine options included the following:

- One Club gradually phased out high-fat and high-sugar snacks, replacing just a few offerings at a time, so that youngsters (and staff) could adjust. This Club also provided nutrition information for all of the vending machine content, posting it directly on the machines and updating it over time as the content was gradually changed. The staff member responsible for Triple Play at this Club pointed out that the Club was able to continue using the same vending machine provider. It simply took a review of the available options to begin the change process.

- Another Club only allowed access to the vending machines during certain hours. While not eliminating the availability of some candy and salty snacks entirely, this was a first step toward what for this, and no doubt many Clubs, was a significant nutritional shift.

- One Club, despite much resistance from staff and participants, has managed to replace all of the vending machine content with nutritional alternatives. An initially unpopular move, this vending machine shift has signaled, to staff especially, the intent to integrate Triple Play in general – and the food and nutrition aspects of it, in particular – into all relevant aspects of Club operations.

- Through thoughtful and comprehensive program design and implementation, Triple Play targets improvements in nutritional knowledge and healthy eating habits for youth. In addition to impacting eating habits, Triple Play is also targets youth physical activity levels. Next, we examine the impact that Triple Play had on physical activity outcomes for youth at participating Clubs.

CHAPTER 3: IMPACTS ON PHYSICAL ACTIVITY OUTCOMES

"Before Triple Play, kids wanted to do the same thing every day, like basketball. Now they try different games; they're more open to new stuff and its increased participation in the gym."
- Teen Coordinator

The concern over the declining levels of physical activity among youth is rooted in its centrality for good health. To promote good health outcomes, CDC and USDA recommend that children and adolescents participate in at least 60 minutes of physical activity most days of the week (USDA, 2005). Engaging in moderate or vigorous physical activity has been associated with a wide range of physical and mental well-being outcomes (Biddle & Armstrong, 1992; CDC, 2008; Craig, Goldberg, & Dietz, 1996; Gordon-Larsen, McMurray, & Popkin, 2000; Kobl & Hobbs, 1998; Lee, Burgeson, Fulton, & Spain, 2007; Nader, 2008; Reynolds, Killen, Bryson, Maron, Taylor, Maccoby, & Farquhar, 1990; Trost, Pate, & Saunders, 1997; Zakarian, Iannotti, & Hofstetter, 1994).Some of these potential benefits include:

- Improved physical fitness and the development of motor skills necessary for participation in sports and other physical activities;
- Development of student self-discipline and responsibility for health and fitness, as well as becoming more confident, assertive and self-controlled;
- Reduced early health risk factors, such as those associated with coronary heart disease and smoking;
- Improved academic outcomes such as reading skills, math, science and social studies;
- Increased opportunities for youth to assume leadership, cooperate with others and accept responsibility for their own behavior;
- Reduced anxiety, depression, mood and higher self-esteem by providing an outlet for releasing tension and anxiety and improving body image; and
- Improved pro-social development and peer relationships.

The second core component of Triple Play is the "Body" component, which is comprised of three elements: (1) Daily Challenges, (2) Club tournaments and (3) Sports Clubs. Each of these elements is designed to increase the opportunities for members to engage in vigorous physical activity and begin establishing a lifelong pattern of engagement in physical exercise.

To assess levels of physical activity, youth were asked to complete a physical activity log where they reported the number of minutes they spent in physical activity each day for the last week. This was used to create an average number of minutes per day spent in physical activity over the last week. We also used this log to calculate the number of days during the prior week youth met the standard of at least 60 minutes of physical activity and the number of days that youth report being inactive (less than 30 minutes of physical activity per day).

Table 3.1 summarizes the physical activity outcomes for which Triple Play had an impact and shows three key findings:

- *Triple Play increases the amount of time youth spend engaged in physical activities and exercise*. It increases the average amount of time that youth spend in at least moderate physical activity each day and the average number of days that youth engage in at least one hour of physical activity in a week.

- *Triple Play helps youth meet recommended standards of physical activity levels* – by increasing the percentage of youth who engage in an hour or more of exercise at least five days a week and decreasing the percentage of youth who are relatively inactive.

- *Triple Play has the strongest impact on increasing physical activity levels for more sedentary youth*.

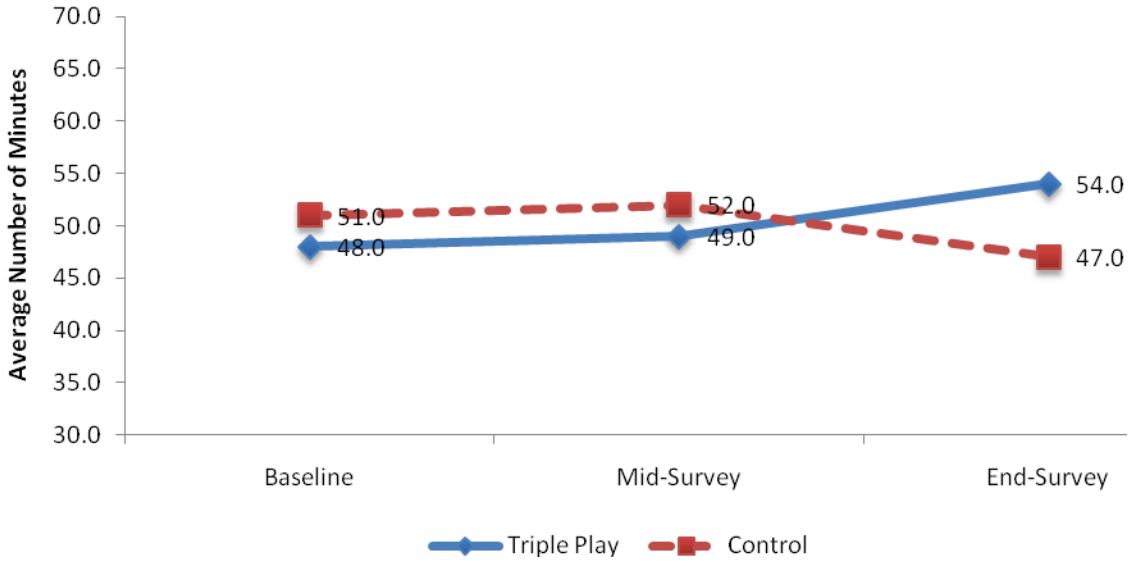
Table 3.1: Overall Impacts of Triple Play on Physical Activity (All Youth)

Amount of Physical Activity (Short-Term Outcomes)		**Physical Activity Standards (Intermediate Outcomes)**	
Outcome Measure	**Impact**	**Outcome Measure**	**Impact**
Average days per week exercising for 1 or more hours	↑↑	Percentage of youth engaged in regular vigorous activity (at least one hour five days a week)	↑
Average minutes per week spent exercising	↑	Percentage of youth who are relatively inactive (less than 30 minutes per day for four days a week)	↑↑

Key Finding 6: Triple Play increases the amount of time youth spend engaged in physical activities and exercise.

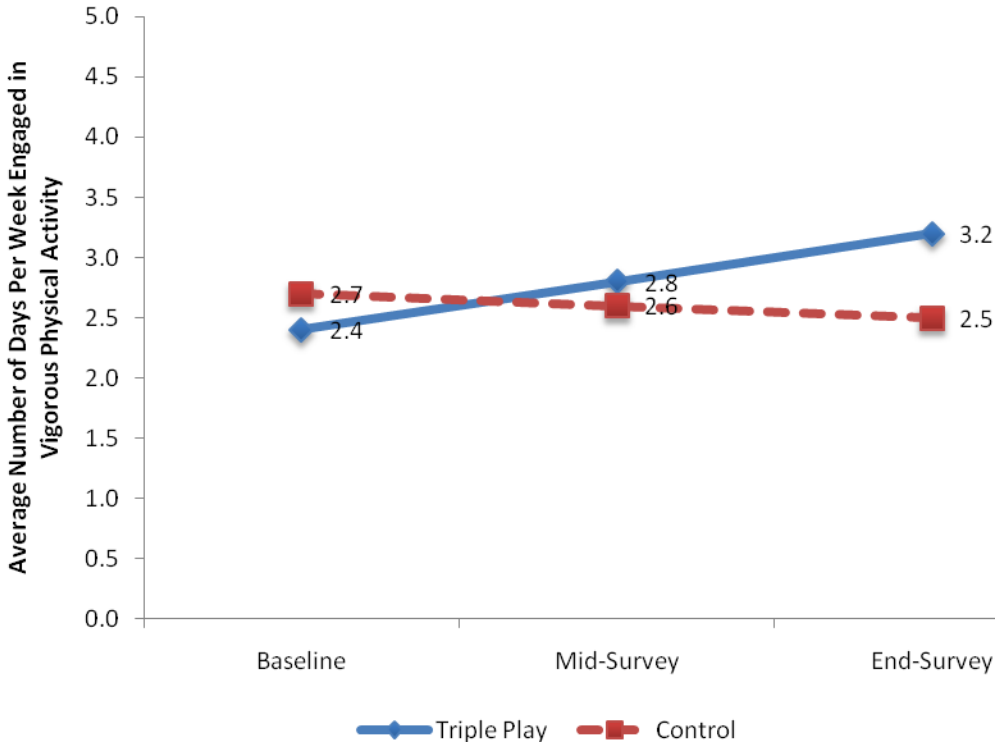
One way to measure improvement in the amount of physical activity engaged in by youth is to look at the average amount of time youth are physically active each day. Figure 3.1 shows the average number of minutes a day in which youth engage in some form of exercise. Triple Play appears to positively impact the number of minutes that youth reported engaging in exercise.

FIGURE 3.1: Impact of Triple Play on Number of Minutes Spent Exercising Per Day



Note: N = 507 (Triple Play) and 220 (Control Clubs)

FIGURE 3.2: Impact of Triple Play on Number of Days Engaged in at Least One Hour of Exercise



Note: N = 507 (Triple Play) and 220 (Control Clubs)

Specifically, Triple Play Club members increased their average daily time being physically active by six minutes (from 48 minutes to 54 minutes) between baseline and the final follow up. Conversely, control Club members reported engaging in less physical activity at follow-up than at baseline (a decrease of four minutes in active time (from 51 minutes at baseline to 47 minutes at follow-up)).This results in Triple Play youth engaging in activity an average of 10 more minutes a day than control youth. Another way to understand this impact is to say that Triple Play youth got closer to the standard of an average of 60 minutes a day (90 percent or 54 out of 60 minutes), while control Club youth got farther away from this standard (78 percent or 47 out of 60 minutes).This translates into an average of nearly an hour per week (49 minutes) more activity for youth who participate at Triple Play Clubs versus their peers at non-Triple Play Clubs.

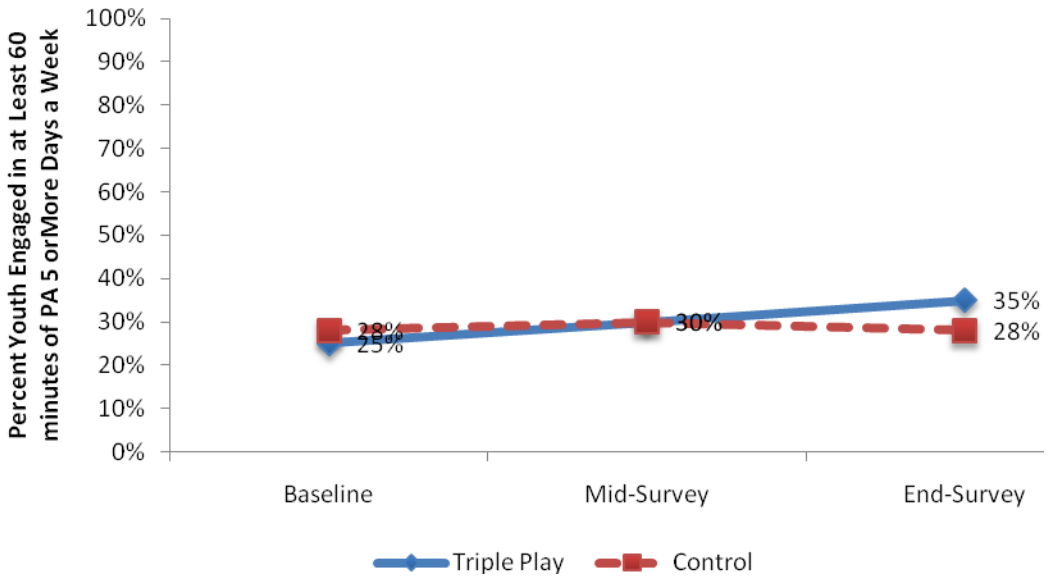
Figure 3.2 shows the average number of days that youth exercised for 60 minutes or more (the desired standard for physical activity for children and adolescents).Youth at Triple Play and control Clubs started at the same level of activity – with Triple Play youth reporting they exercised for at least 60 minutes an average of 2.4 days a week, compared to 2.7 days for control Club youth. By the end of the study, Triple Play youth had increased the number of days they exercised for at least 60 minutes to 3.2 days (an increase of more than three-fourths of a day on average), while control Club youth actually decreased the number of days of high physical activity – to 2.5 days.

Key Finding 7: Triple Play helps youth meet recommended standards of physical activity levels.

Another way to understand the impact of Triple Play on youth physical activity levels is by examining the percentage of youth who meet the desired standard of physical activity on a regular basis (at least five days a week) and the percentage of youth who are relatively physically inactive (engage in physical activity 30 minutes or less four or more days a week).Figure 3.3 shows the percentage of youth in Triple Play and control Clubs who met the desired standard of 60 minutes of physical activity a day for at least five days a week. In addition, Figure 3.4 shows the percentage of youth who reported not being physically active four or more days a week – that is less than 30 minutes a day for both sets of Clubs.

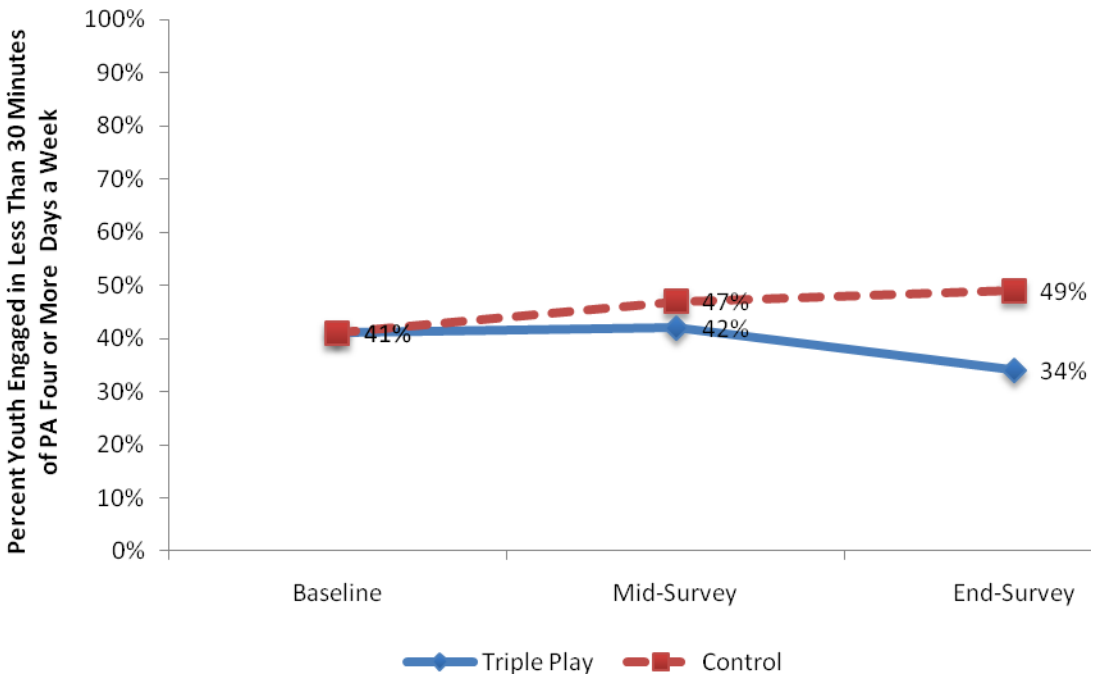
At baseline, Triple Play and control Clubs had a similar percentage of youth who reported engaging in regular vigorous activity (25 percent versus 28 percent). Similarly, there were no differences in the percentage of youth who reported being relatively inactive in the two groups (41 percent in both groups). At baseline, both Triple Play and control Club youth were relatively inactive.

FIGURE 3.3: Percentage of Triple Play and Control Youth Engaged in at Least One Hour of Exercise Five or More Days a Week



Note: N = 507 (Triple Play) and 220 (Control Clubs)

FIGURE 3.4: Percentage of Triple Play and Control Youth Engaged in Thirty Minutes or Less of Exercise Four or More Days a Week



Note: N = 507 (Triple Play) and 220 (Control Clubs)

However, by the end of the study, 35 percent of Triple Play youth reported engaging in regular, vigorous activity (an increase of 10 percentage points) in contrast to their control Club peers who reported no change in the their engagement in vigorous physical activity (28 percent at the beginning and end of the study).This impact translated into a somewhat overall higher percentage of Triple Play youth (7 percentage points) engaged in regular physical activity than control Club youth.

Triple Play also has a positive impact on getting sedentary, or regularly inactive youth, to engage in at least moderate physical activity. At the beginning of the study, 41 percent of each group was regularly inactive (exercising for less than 30 minutes four or more days per week). By the end of the study there was a difference of 15 percentage points between the Triple Play and control Clubs – 34 percent of Triple Play youth were sedentary compared to 49 percent of control Club youth.

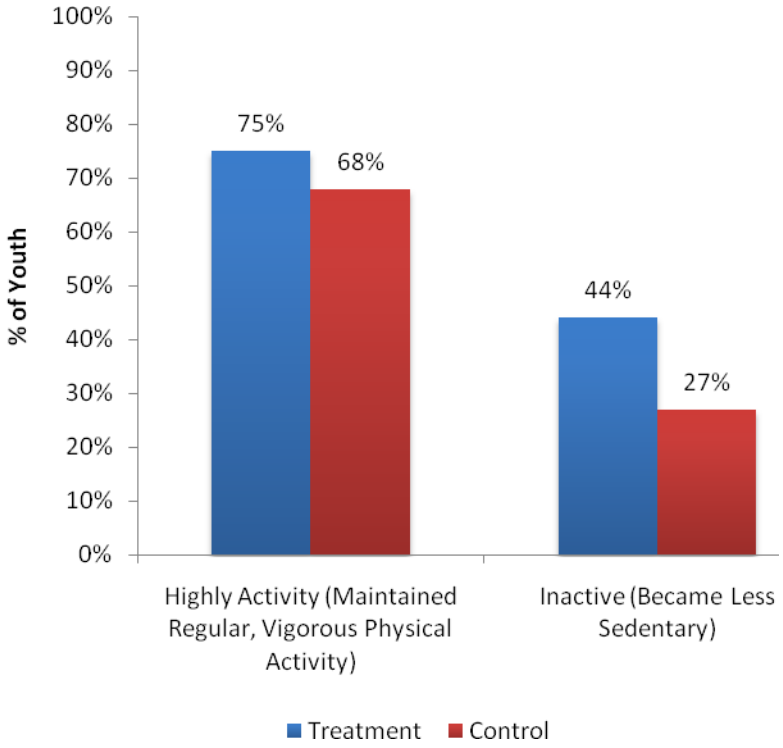
Key Finding 8: Triple Play has the strongest impact on increasing physical activity levels for more sedentary youth.

We classified youth into the two physical activity groups at baseline – very physically active and relatively inactive – to see if either group benefitted more from Triple Play at their Clubs. About the same proportion were very active in all Clubs – in Triple Play Clubs 25 percent (127 of 507), in control Clubs 28 percent (61 of 220) – and not very active in all Clubs (41 percent in both groups).

Figure 3.5 shows there was no significant impact on the likelihood of youth who were already very physically active maintaining that activity level at the end of the study. Youth who were already highly active at the beginning of the study tended to stay highly active, although there were slightly more Triple Play youth who maintained that level (75 percent versus 68 percent respectively).

In contrast, Triple Play appears to have a strong impact on helping youth who are sedentary at baseline become more active. Figure 3.5 shows 44 percent of the Triple Play youth who reported being relatively inactive at the beginning of the study (30 minutes or less four or more days a week) increased their physical activity levels by the end of the study while only 27 percent of the control Club youth moved from inactive to moderately active.

FIGURE 3.5: Changes in Physical Activity Levels for Highly Active and Inactive Youth (From Baseline to Final Survey)



Note: Triple Play Highly Active Youth N = 127 and Inactive Youth N = 208; Control Clubs Active Youth N = 61 and Inactive Youth N = 90 at Baseline

What Aspects of Triple Play Programming Are Related to Changes in Physical Activity?

While nearly all Clubs provide opportunities for members to engage in physical activity, Triple Play includes intentional strategies that are intended to maximize participation in physical exercise on the part of all members, especially those unlikely to participate in more typical fitness-related Club offerings, such as organized competitive sports teams or free play in the gymnasium. Two elements of Triple Play's "Body" component are designed to get youth active: Daily Challenges and Sports Clubs. These activities are intended to supplement, rather than supplant, Club sports teams, which remain a central feature of the Club experience for a sizeable minority of members – particularly those who are older or who tend to be more athletically inclined. By adding Triple Play-related strategies to their established fitness-related programming, Clubs expand the number and variety of activity options that are available to

members. This, in turn, is intended to increase the likelihood that a larger proportion of young people will find – and participate in – a physical activity or activities that appeal to them.

This section examines whether or not improvements in physical activity (defined as the percentage of youth who engage in regular vigorous physical activity and the percentage of youth who are no longer inactive) are related to: (1) youth reports of how much they were involved with the Daily Challenges; and (2) youth participating in sports teams or Sports Clubs (combined because of the low numbers of youth reporting they participated in Sports Clubs).

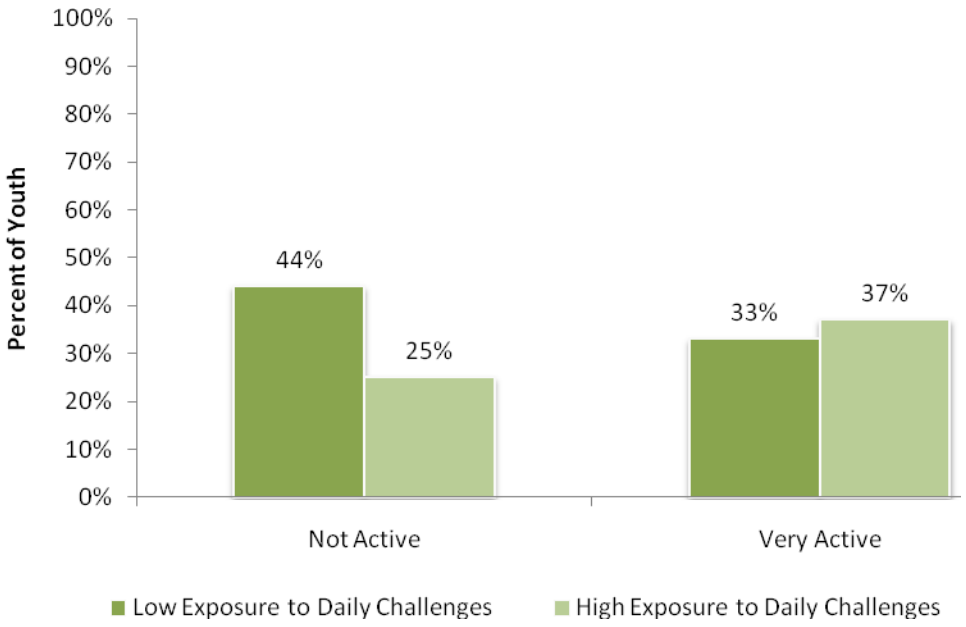
The following analyses are based only on Triple Play Clubs and youth since it focuses on implementation. Participation data come from the youth survey since there was no practical system for staff to collect daily data over the study period on youth's involvement across the multiple activities that comprise Triple Play. The results presented here represent a first look at what level of participation is needed to achieve the desired impact on youth outcomes. A more detailed examination of this issue would require more refined participation data.

To define high and low levels of participation in Daily Challenges and in Sports Clubs/teams, we categorized youth's responses to how often they participated in these two types of activities as follows: youth who indicated they attended at least two sessions a week were classified as having higher exposure; youth who indicated they engaged in these structured physical activities once a week or less were classified as having lower exposure. Similar to our discussion in the previous section, the classification into low and high exposure does not specifically address the amount of exposure needed to have a positive impact with Triple Play – however, it does allow us to examine whether or not frequency of participation can make the impact stronger.

Participation in Daily Challenges

Daily Challenges are short, physical activities designed to get kids moving. They may include relays, jump roping, four-square or any number of other games and activities. The goal is to provide a quick opportunity for youth to engage in physical activity in a fun, non-threatening manner, in activities that do not require a great deal of athletic skill. Daily Challenges seem to work best in meeting the Triple Play goal of encouraging typically inactive youth to become more active. In examining the relationship between participating in Daily Challenges with levels of physical activity, it appears that Triple Play youth who engage in Daily Challenges at least twice a week are less likely to be inactive (Figure 3.6).A total of 44 percent of those reporting engaging in Daily Challenges once a week or less are inactive, versus 25 percent who reported engaging in Daily Challenges twice a week or more. Conversely, there appears to be no meaningful relationship between participating in Daily Challenges and the likelihood of being vigorously active on a regular basis (33 percent and 37 percent).

FIGURE 3.6: Relationship Between Exposure to Daily Challenges and Activity Levels



Note: N = 206 (less than two times per week) and N = 301 (more than two times per week)

Implementing Daily Challenges

According to Triple Play Club staffers, Daily Challenges are the "easiest" of the Triple Play components to implement. Ideas for ways to engage youth, provided in a binder, have reportedly helped staff expand the amount and variety of activities that they have typically offered during open gym time. By organizing this time, physical education directors can provide structure and guidance to gym time, which some have reported is particularly appealing to less athletically-inclined members who might otherwise hesitate to join in a pick-up basketball game; or who might find themselves left out of a game that only required a specific number of participants.

Triple Play Clubs have implemented Daily Challenges in a variety of ways to suit the interests of members, to accommodate the other activities that comprise the scheduled rotation, and to ensure participation of the greatest proportion of members. Some Clubs offer Daily Challenges each day:

- At one Club, Daily Challenge takes place every day after Power Hour. All members gather in the gym for a 15-minute activity that typically involves an easily managed competition, such as relay races among combined age groups. It is a way to "jump-start the kids' bodies" after time spent doing homework and/or reading. This activity also fits into the Club rotation marking a shift from the more sedentary aspect of the day to one that includes regular free gym time, as well as Gamesroom and other activities.

At other Triple Play Clubs, Daily Challenges are built into the rotation and are offered on specific days, two or three times a week:

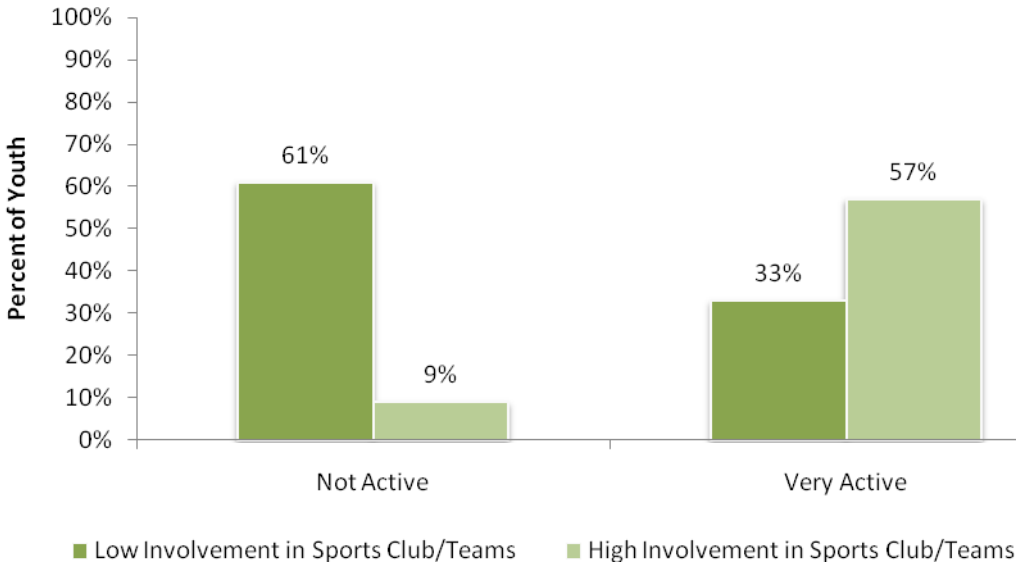
- One Club that offers Daily Challenges twice a week conducts activities such as the jump rope challenge and timed running races. “Records” for these and other quantifiable – and often individual – activities are posted on the walls (i.e., most jump-rope jumps in one minute; the number of seconds it takes to run from one end of the gym to the other, and back, etc.).A teen Sports Club member assists the physical education director in keeping time and noting it on a clipboard. If a record is broken, the new one is posted by the following day. In addition, the data are available to kids who want to track their own improvement.

- Another Club has integrated a Daily Challenge into its regularly scheduled assembly, which all members attend each day. Not only does this ensure 100-percent participation for all who are at the Club, it also emphasizes how much the Club values physical activity. Additionally, it provides opportunities for every member – whether they spend all of their time in the gym or tend to avoid it – to get up and move. The expectation that everyone will participate is intended to make it easier for the less athletically inclined members to join in. It encourages even the Club’s most talented athletes to engage in activities they may not otherwise participate in, with individuals they may not otherwise meet.

Participation in Sports Clubs and/or Teams

Involvement in team sports and Sports Clubs, whether as an athlete, volunteer or team manager, increases physical activity levels of participants. This pattern of increased physical activity among youth who participate in Sports Clubs and/or sports teams is not surprising (Figure 3.7). Youth who participate in sports teams or Sports Clubs are much more likely to engage in regular vigorous activity (67 percent versus 33 percent). Conversely, youth who do not participate in sports teams or Sports Clubs are much more likely to be relatively inactive (61 percent of those not participating in sports teams or Sports Clubs, versus 9 percent of those who do participate).

FIGURE 3.7: Relationship between Exposure to Sports Teams/Clubs and Activity Levels



Note: N = 257 (Low) and 243 (High)

Establishing Sports Clubs and Tapping into Existing Sports Teams

Nearly all Clubs have some form of intramural sports team in which many youth participate. Sports Clubs are an extension to those intramural sports teams by adding a leadership component for youth. We identified three ways that the Sports Club component of Triple Play is implemented in the Clubs we visited. The first is a sports-oriented version of Keystone or Torch Clubs. In this case, members – often older teen members – earn toward incentives, such as trips or sports gear, by managing the clocks or keeping score for younger members' competitive sports programs and/or serving refreshments at these sporting events. The second is as part of the Club's established competitive sports program, which includes organized intramural and/or inter-Club play. A third way is as a vehicle for expanding sports opportunities for members who may not be interested in joining a competitive team, but who are athletically inclined.

- One Triple Play Club has used the Sports Club component to expand organized athletic opportunities for teen members – whether they participate in the competitive program or not – to engage in less traditional team sports. At this Club, the Teen Director provides opportunities for teen members to explore and participate in a variety of atypical sports. These options target those members who "…aren't inspired by the usual sports." One is "Inferno," which takes place on Friday evenings. Inferno is "…like a reality show on MTV" where participants engage in multiple events modeled on the popular "Survivor" series. When we visited the Club, a group of Sports Club members had also begun training for a local triathlon.

- Another Triple Play Club established a running club, which meets twice a week and operates in eight-week cycles. A popular program at the Club, there were more than 100 members of all ages participating throughout the course of a single year. When the weather is warm, Club members run outside; during cold or inclement weather they run around the gym. Runners keep track of their mileage throughout the 8-week cycle, gauging their progress both in relation to personal goals they set at the beginning and in relation to other Running Club members. In addition to tracking their mileage, nearly all Running Club members competed in a 5k race.

The Sports Club component adds an expanded notion of sports participation through the development and provision of less-typical athletic options, such as organized running or triathlon training; and through sports-related service to Triple Play Clubs, particularly on the part of older members. In these ways, Sports Clubs contribute to increased physical activity and engagement on the part of Triple Play Club members.

A significant challenge for Clubs in implementing Sports Clubs is low participation levels. In some Clubs where the focus is on leadership and management, only a few teens have the opportunity to participate in the Club – since the number of opportunities are limited (e.g., equipment care, keeping score at games, etc.).Other Clubs have low memberships in Sports Clubs because of the specialized nature of the Club – such as running, or swimming. In addition, youth are more likely to participate in the intramural teams themselves – leaving no time for Sports Club participation.

However, some Clubs have been able to provide significant leadership opportunities for the youth who do participate. At one Club, the Sports Club members actually run the daily challenges component of Triple Play and help supervise the free-play in the gym and playground. In another Club, youth from the Sports Club started a tennis team for younger youth. In this same Club, the Sports Club members also helped with the concessions at regional intramural events held at the Club.

Through comprehensive intervention strategies, the Triple Play program is designed to impact Mind, Body and Soul. Through nutrition and healthy living education, youth improve their minds. The body component of Triple Play gets youth more physically active. Next, we turn to the “Soul” component of Triple Play as we examine the impacts on developmental outcomes of participating youth.

CHAPTER 4: IMPACTS ON DEVELOPMENTAL OUTCOMES

"[T]he part of Triple Play that most appeals to members is the Gamesroom…Kids don't come to the Gamesroom for character development; they come for games. And we do character development while they're here." – Club Director

Establishing healthy attitudes and practices regarding physical activity and exercise in childhood is essential because they shape behaviors and attitudes in adulthood (Kohl and Hobbs, 1998) and have significant positive effects on self-esteem and pro-social behaviors (Lee, Burgeson, Fulton, & Spain, 2007; Reynolds, Killen, Bryson, Maron, Taylor, Maccoby, & Farquhar, 1990; Trost, Pate, & Saunders, 1997;). At the same time, participation in activities that allow youth to establish healthy relationships with both adults and peers has been shown to have a significant effect on youth's likelihood of achieving good developmental and young adult outcomes such as a sense of mastery and control and positive peer relationships (Gambone, Klem, & Connell. 2002).Combining support for physical and developmental outcomes is the goal of Triple Play – prompting the inclusion of a "Soul" component designed to address social-psychological growth as one of the primary goals of the Triple Play program.

The venue for this component is one of the signature components of all Boys & Girls Clubs: the game room – a place to address positive youth development outcomes such as communication, cooperation and self-confidence through non-sports activities. This study measured the quality of peer interactions (including peer communication, how youth handle peer conflict and the degree of peer support youth experienced), and youth's sense of mastery and control to gauge Triple Play's impact in this arena. Since these outcomes are more general youth development outcomes with many important influences other than Club participation and exposure to Triple Play, we would expect the impact of Triple Play to be less strong for these outcomes than found with nutritional knowledge, behavior and physical activity.

Table 4.1 summarizes the four general developmental outcomes for which Triple Play had an impact:

- *Triple Play improves youth's interactions with peers* by slightly decreasing the amount of negative peer interaction reported and slightly increasing the amount of positive peer interactions that youth experience.
- Triple Play helps <u>both</u> youth who start with good quality peer relationships and those who start with poor ones.
- *Triple Play slightly increases youths' sense of mastery and control*.The proportion of youth in treatment Clubs who had high levels of mastery and control grew modestly from baseline to the end survey.

- *Triple Play helps youth who start out with high mastery maintain it as they age*.The proportion of youth in treatment Clubs who had high levels of mastery and control grew modestly from baseline to the end survey, but the proportion in control Clubs fell during this period.

Table 4.1: Overall Impacts of Triple Play on Quality of Peer Relationships and Sense of Mastery and Control (All Youth)

Sense of Mastery and Control		Quality of Peer Interactions	
Outcome Measure	**Impact**	**Outcome Measure**	**Impact**
High sense of mastery and control	↑	Positive peer relationships	↗
Low sense of mastery and control		Negative peer relationships	↑

Key Finding 9: Triple Play improves youth's interactions with peers at the Club.

The quality of peer interactions among peers was measured using four scales – communication, conflict, emotional support and practical support – combined into a single measure of peer interactions. Youth scores across the four scales were classified into the overall "high" peer interaction group if they were classified as "high" on three of the four subscales[9]; and classified into an overall "low" peer interaction group if they were classified as "low" on two of the four subscales.

Figures 4.1 and 4.2 show the pattern of improvement in the quality of peer interactions over the course of the study for both groups. The pattern of results shows an impact for all youth in improving peer relationships, both by increasing the percentage of youth who report high levels of positive peer interactions (Figure 4.1), and by decreasing the percentage of youth who report low levels of positive peer interactions. While the percent of youth with high levels of peer interactions rose slightly over the study period for the Triple Play Club youth (from 26 percent to 31 percent), it decreased for the control Club youth (24 percent to 20 percent).With respect to low peer relationships, the proportion of Triple Play youth in this category declined 10 percentage points (Figure 4.2) over the study period (from 62 percent to 52 percent), while it remained the same for the control Club youth (62 percent to 61 percent).Both of these patterns yielded small but statistically significant impacts of Triple Play on increasing positive and on reducing negative peer interactions.

[9] *See Technical Appendix A for a description of the measures and their creation.*

FIGURE 4.1: Impact of Triple Play on Positive Peer Relationships

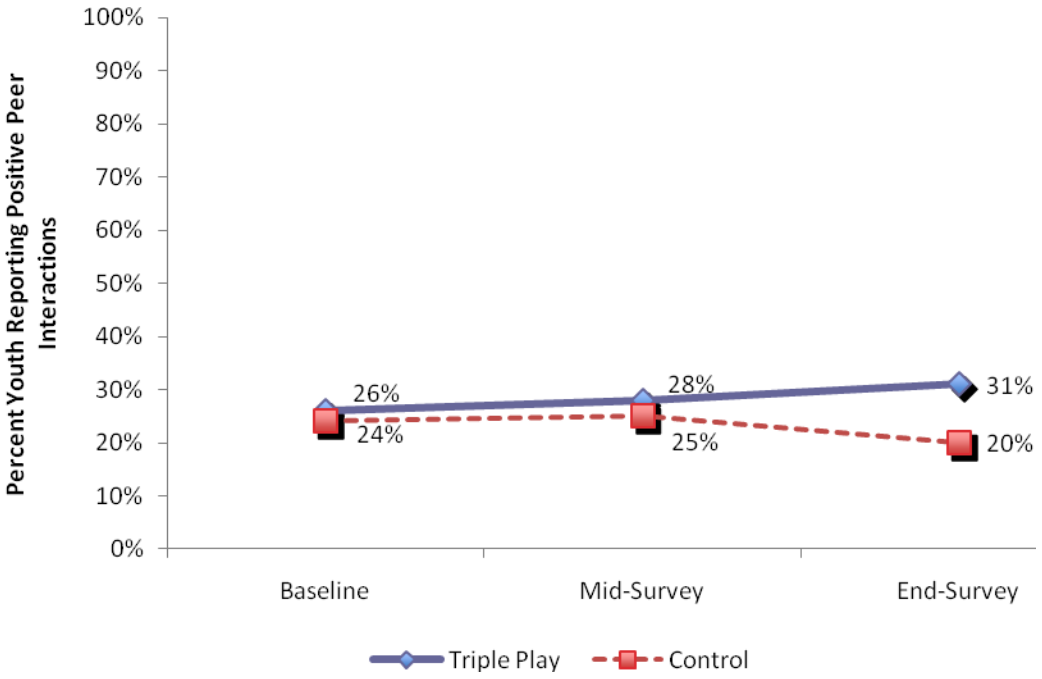
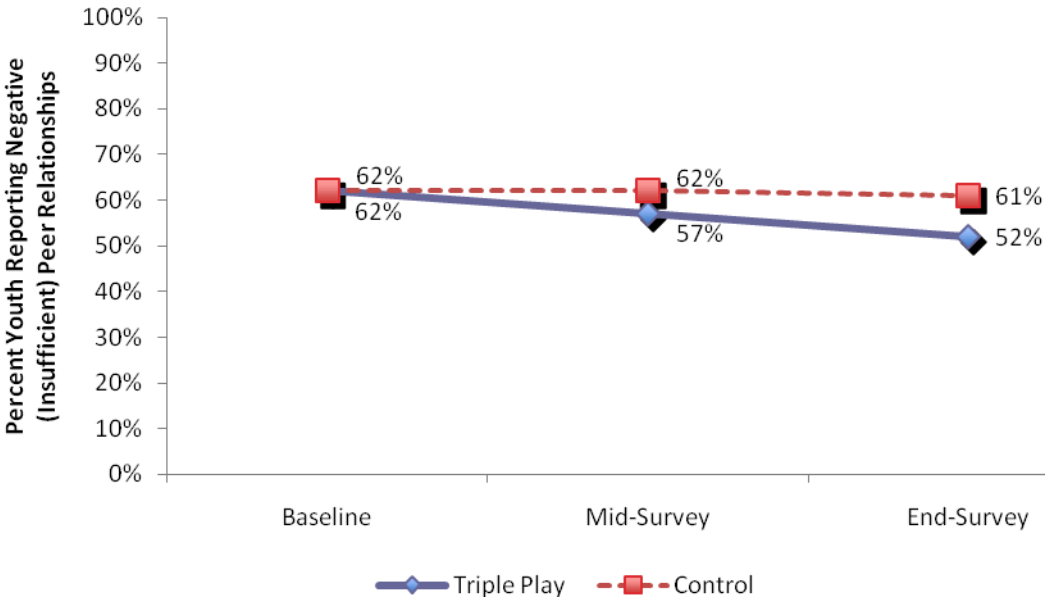


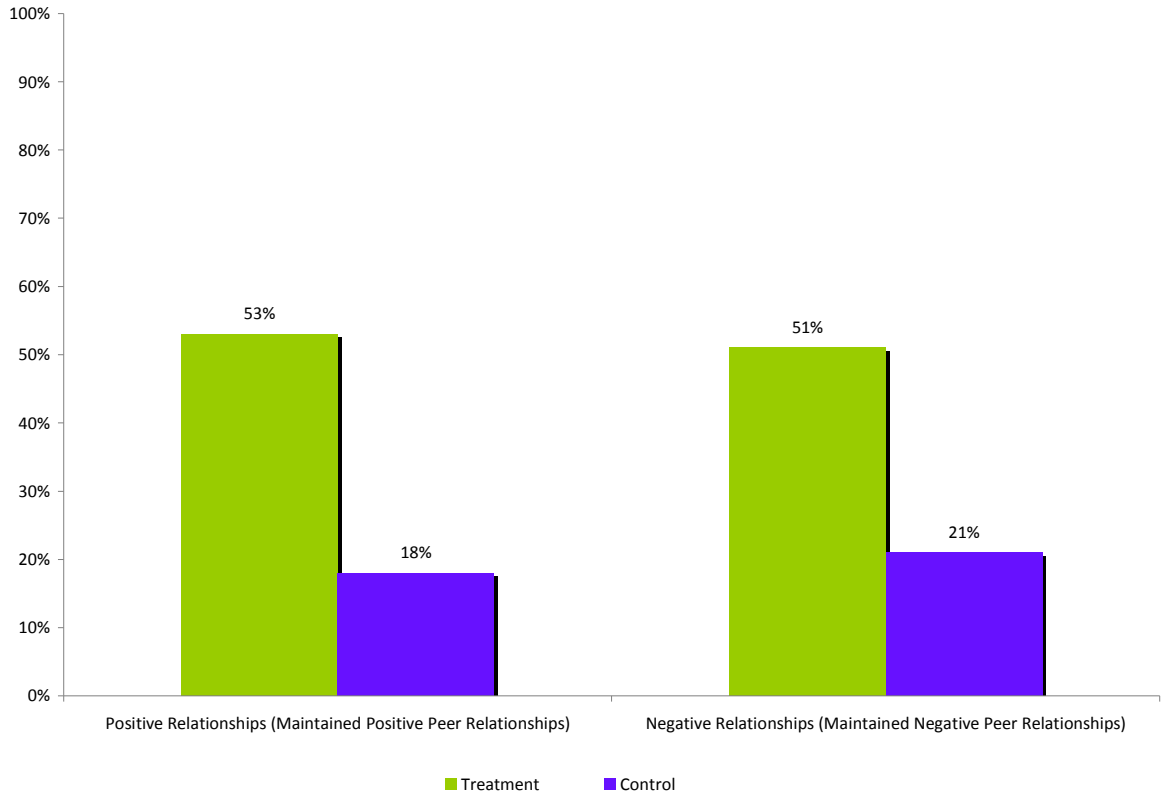
FIGURE 4.2: Impact of Triple Play on Negative Peer Relationships



Key Finding 10: Triple Play helps both youth who start with good quality peer relationships and those who start with poor ones.

Another way to examine the impact of Triple Play on youths' peer interactions is to look separately at youth who started the study with good peer relationships and see if they were maintained and to look at youth who started the study with poor quality peer relationships and see if they improved (see Figure 4.3). For youth who reported negative relationships at baseline, there were significant differences in the percentage of Triple Play and control Club youth who reported improved peer interactions by the end of the study (44 percent versus 33 percent, respectively).Similarly, there were significant differences between Triple Play and control Club youth in the percentage of youth who maintained high quality levels of peer interactions from baseline to the end of the study (66 percent versus 52 percent, respectively).

Figure 4.3: Changes in Quality of Peer Relationships for Youth with Positive and Negative Peer Interactions (at Baseline)

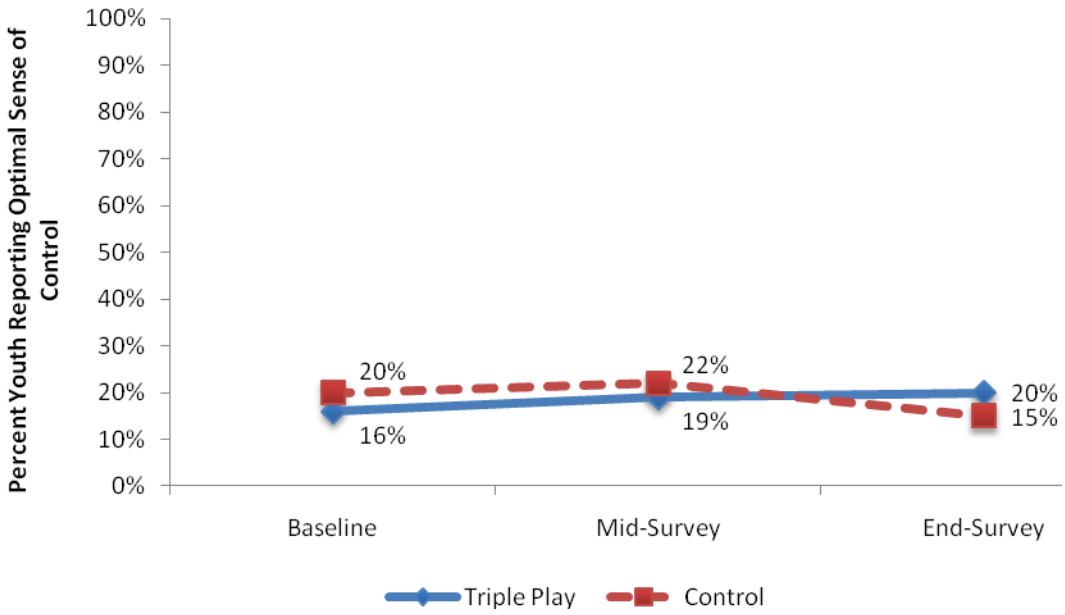


Note: Triple Play youth baseline positive peer interactions, N = 132, negative peer interactions N = 314; Control Club youth baseline positive peer interactions, N = 53, negative peer interactions N = 136.

Key Finding 11: Triple Play slightly increases youths' sense of mastery and control.

Mastery and control measures the extent to which a person feels they are able to affect/influence what happens to them in life by their behavior. The intent of Triple Play is to strengthen this outcome for youth through the competence they develop physically, nutritionally and socially. Triple Play appears to have a positive impact on youths' sense of control over their lives (see Figure 4.4) by increasing the percentage of youth with high levels of mastery and control. However, there was not a significant overall impact of Triple Play for youth with initially low levels of mastery. The proportion of youth in treatment Clubs who had high levels of mastery and control grew modestly from baseline to the end survey (from 17 percent to 22 percent) but the proportion in control Clubs fell during this period (from 20 percent to 15 percent).This is a small but significant impact for youth at Triple Play Clubs. While the magnitude of the effect is small, this can be a very important mediating outcome since it has been linked with lower levels of depression for girls and lower rates of drinking and smoking for boys (Avison and McAlpine, 1992; Piko, 2005). It is also important because lower levels of mastery and control have been shown to be associated with lower levels of physical activity (Biddle & Armstrong, 1992; Reynolds, et. al,, 1990; Valois, Umstattd, Zullig, & Raheem, 2008).

FIGURE 4.4: Impact of Triple Play on Positive Mastery and Control

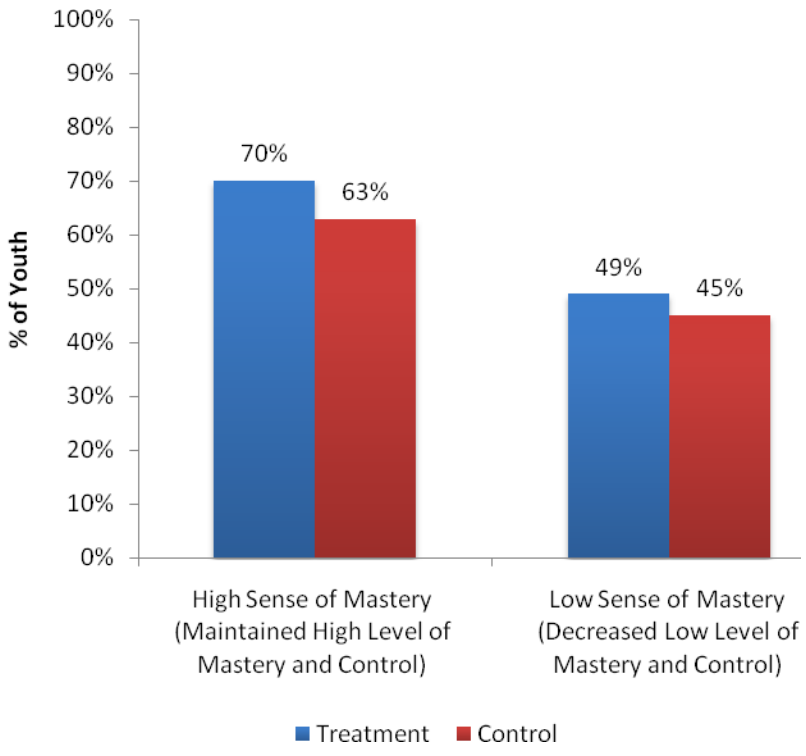


Note: Triple Play youth, N = 507; Control Club youth, N = 220

Key Finding 12: Triple Play helps youth who start out with high mastery maintain it as they age.

Again, we looked at the trends for youth who started high in mastery and control at baseline separately from those who started with low mastery.Figure 4.5 shows the percentage of Triple Play and control Club youth who improved their sense of mastery and control (of those who reported a low sense of control at baseline) and the youth in both groups who maintained high levels of mastery and control over the course of the study.When considering youth with low levels of mastery at baseline, there were no significant differences in the percentage of Triple Play and control Club youth who reported improved sense of mastery and control by the end of the study (49 percent versus 45 percent, respectively).However, there were small, but significant differences between Triple Play and control Club youth in the percentage of youth who maintained high levels of mastery from baseline to the end of the study (70 percent versus 63 percent, respectively).

Figure 4.5: Changes in Sense of Mastery and Control for Youth with High and Low Sense of Mastery and Control (at Baseline)



Note: Triple Play youth baseline high mastery/control, N = 81, low mastery/control N = 213; Control Club youth baseline high mastery/control, N = 44, low mastery/control N = 88.

How Is the Soul Component of Triple Play Components Related to Improved Peer Relationships?

As the hub of Club activity, the Gamesroom is in many ways an ideal space for the implementation of Triple Play's "Soul" component. It is the place where there is – usually by design, although sometimes by default – less structured activity for young people, and thus a greater likelihood of self-directed recreation and peer interaction. In this section, we examine the degree to which youths' reported exposure to the Gamesroom is related to their reported quality of peer interactions[10]. The Gamesroom is a venue where youth can learn to communicate, cooperate, compete and develop self-confidence in non-sports activities – hopefully increasing positive interactions among youth.

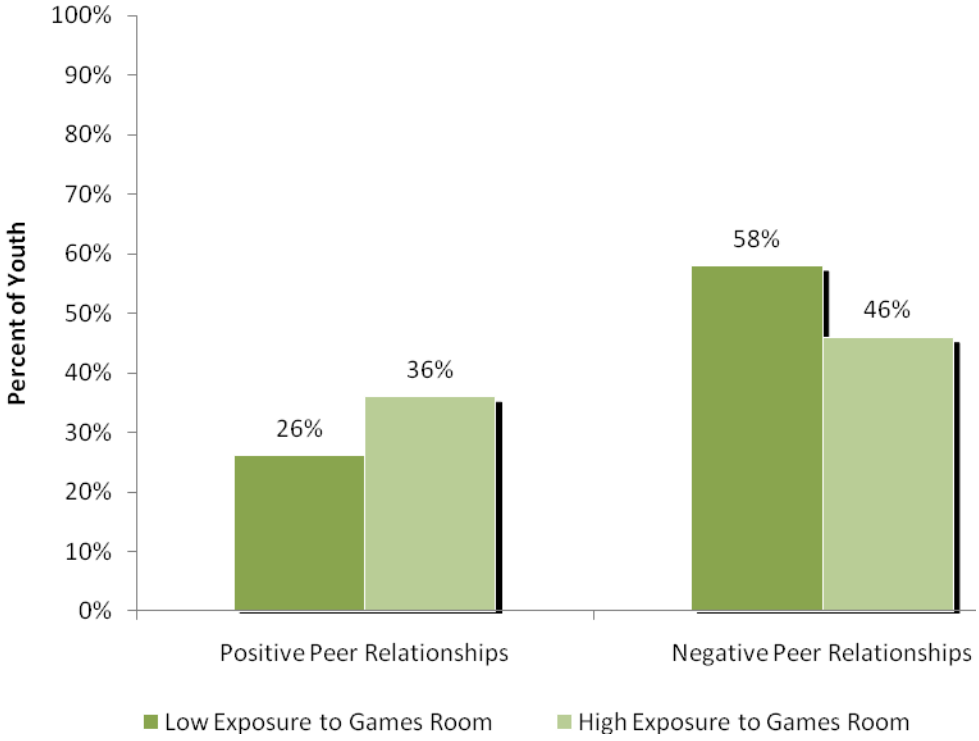
As in previous chapters, the following analyses are based only on Triple Play Clubs and youth since it focuses on implementation. Participation data come from the youth survey since there was no practical system for staff to collect daily data over the study period on youth's involvement across the multiple activities that comprise Triple Play. So the results presented here represent a first look at what level of participation is needed to achieve the desired impact on youth outcomes. A more detailed examination of this issue would require more refined participation data.

To define levels of participation in the Gamesroom, we categorized youth's responses to how often they did Gamesroom activities: youth who indicated they attended at least two sessions a week were classified as having higher exposure; youth who indicated they did activities in the Gamesroom once a week or less were classified as having lower exposure. Similar to our discussions in Chapters 2 and 3, the classification into low and high exposure does not specifically address the amount of exposure needed to have a positive impact with Triple Play – however, it does allow us to examine whether or not frequency of participation can make the impact stronger.

It appears that youth who report doing Gamesroom activities at least twice a week or more have better peer relationships than those with a low level of participation in the Gamesroom. Specifically, youth who participate in the Gamesroom more often report more positive peer relationships (36 percent versus 26 percent reporting high peer interactions, and 46 percent versus 58 percent reporting low levels of positive peer interactions) (see Figure 4.6). These results suggest that the regular participation in Gamesroom activities can enhance the effect of Triple Play on youth developing more positive relationships with their peers at the Club.

[10] *We also examined the relationship of Gamesroom participation on youths' sense of mastery and control.However, no significant relationships were found for this outcome.*

FIGURE 4.6: Relationship of Exposure to Gamesroom and Peer Relationships



Note: Low Exposure, N =136; High Exposure, N = 371

Implementation of Gamesroom Activities

This activity is overseen and informed by Gamesroom staff members, who play a central role in the implementation of Triple Play's "Soul" component, which subtly, though significantly, has altered the nature of this important space by influencing the interactions that occur there. What we have learned from Triple Play Clubs is that adding structure has made the Gamesroom a more fun and inviting place for kids to be. By making the development of social and ethical skills a more explicit element of the Gamesroom experience – while retaining the casual and uncomplicated atmosphere that makes the Gamesroom such a popular place – these Clubs have simultaneously enhanced members' experiences while promoting an essential component of the Triple Play program.

The Gamesroom appears to be the most easily implemented aspect of Triple Play, because it flows naturally from the existing activities. Clubs implemented several successful strategies in making the Gamesroom a cooperative place that contributes to the development of positive peer relationships in the Clubs we visited.

At one Triple Play Club, a staff member writes a question on a dry-erase board in the Gamesroom each day and the group discusses it before they begin playing. The question

typically involves an ethical dilemma, and the discussion provides an opportunity to engage in informal character development. It also is intended to set a positive tone for the competition and free-play that will take place. One multiple-choice question included a scenario about a boy missing an easy shot in pool and offered several potential member reactions. Lively discussion ensued about what was – and wasn't – appropriate (or thoughtful) behavior toward a peer. It was an effective activity that addressed an immediately relevant topic; and youth had no trouble voicing their opinions or considering other points of view.

At another Club, there have been significant changes to Gamesroom structure and climate. According to the director, "Before Triple Play, kids in the game room were more or less left on their own – a staff person might interact with individual kids one-on-one, but there wasn't much structure and not really any planned group activities. Now, staff are more likely to interact with groups of youth rather than one-on-one, and they are more intentional about planning specific activities and gathering kids up from around the room to participate. This might or might not have happened before, but now staff are intentional. And the range of activities includes both those initiated by youth as well as ones initiated by staff. As a result, kids come to the Club with an expectation that there will be something fun to do."

Staff at Triple Play Clubs also report that just "hanging out" with youth in the [teen] Gamesroom provides opportunities for discussions about important issues. For example, on one occasion the Club's Unit Director joined a group older teens to watch a basketball game on TV. During the game, the youth talked about a fight that had occurred at a previous NBA game. Some of the youth thought that what one of the players had done (going after a fan in the stands) was acceptable behavior given the circumstances. But it quickly became clear that these youth were in the minority. The Unit Director noted that, in fact, most of the youth were saying things that adults in the Club say to them all the time – e.g., "Is that really how you want to represent yourself to the community?"

The Gamesroom serves multiple purposes within the Club setting. At Triple Play Clubs, as is the case at all Clubs, the Gamesroom is a place that offers members numerous opportunities to have fun, interact with a variety of individuals, and build relationships with peers and adult staff. It is also the place where the "Soul" is nurtured. However, Clubs did face some challenges in effective implementation. As with other aspects of Triple Play, the experience level of staff was a challenge for some Clubs. Less experienced staff sometimes had difficulty balancing structure and autonomy in the game room activities. This led to inconsistencies in whether and how youth were guided during their game room time. Another challenge was that game room staff were the least likely to be familiar with the Triple Play resources available to them for guiding activities. The staff actually implementing the Gamesroom activities were usually not the same staff that attended the Triple Play training. A number of staff reported not knowing about the binder of Gamesroom resources, while others talked about needing more ideas to provide structure and fun in the Gamesroom.

Whether through modifications to traditional Boys & Girls Clubs programming, such as the Gamesroom, or through newly designed curricula, Triple Play impacts Mind, Body, and Soul outcomes for participating youth. However, some impacts differ among age, gender, and ethnic groups. In the next section, we examine the differential impact that Triple Play has on sub-populations of youth.

CHAPTER 5: IMPACTS OF TRIPLE PLAY FOR ETHNIC, GENDER AND AGE GROUPS

The previous analyses demonstrated that Triple Play has significant and sometimes substantial impacts on youth with respect to their eating and exercise patterns; and to a lesser degree on peer relationships and a sense of mastery and control. This section explores the pattern of these impacts for different sub-groups (e.g., African American versus white youth; males versus females; or younger versus older youth).Table 5.1 shows a summary of the impacts by ethnicity, gender and age.Three key findings are shown in Table 5.1:

1. *Triple Play generally benefitted White youth and African-American youth more in health related outcomes than it did Hispanic youth*. There was no impact on the number of healthy foods eaten for Hispanic youth, but there was for the White and African-American Triple Play youth. Conversely, Triple Play improved Hispanic youth's frequency of eating breakfast but did not do so for the other two ethnic groups.

2. *Triple Play most significantly benefits girls who exercise an average of two hours more per week than their control group counterparts and are more likely to have high levels of mastery and control.*

3. *While youth of all ages benefitted from Triple Play, older youth – aged 13 and up – benefitted the most*. Youth aged 13 and over showed substantial improvements in the number of healthy foods eaten and the amount of daily exercise, and did not decline in breakfast frequency as did their control group counterparts. Younger youth showed somewhat smaller improvements in healthy eating and exercise and no impact on breakfast frequency.

Table 5.1: Impacts of Triple Play on Healthy Eating Behavior and Physical Activity by Ethnic Group, Gender and Age

Outcome Measure	African American	Hispanic	White	Males	Females	9-12 Year Olds	13+ Year Olds
Number of Healthy Foods	↗		↗↗	↑	↑↑	↗	↗↗
Frequency of Eating Breakfast		↗					↑
Average number of minutes of physical activity per day	↑↑	↑	↑↑	↑	↑↑	↑↑	↑↑

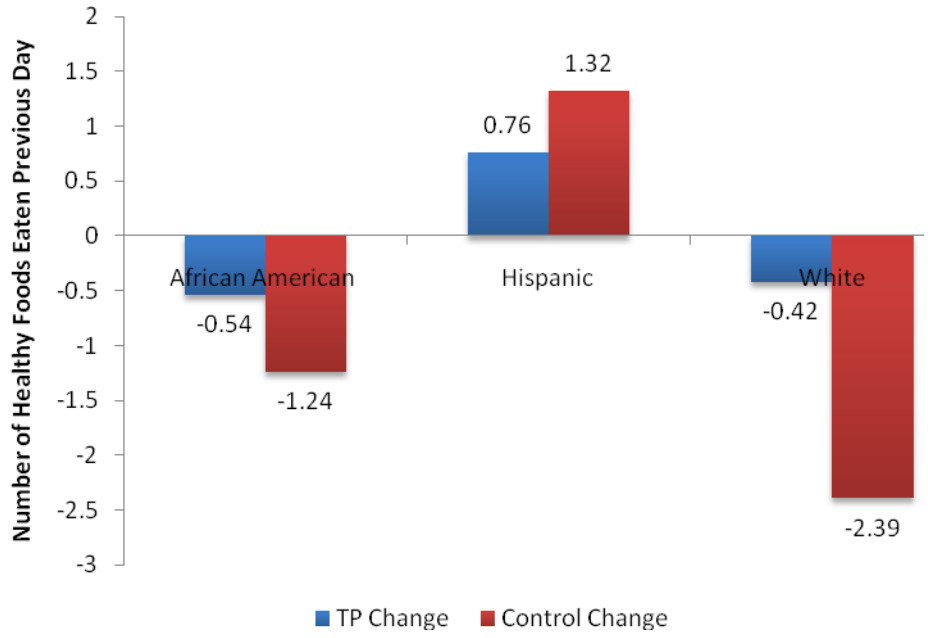
Key Finding 13: Triple Play generally benefitted White youth and African-American youth more in health related outcomes than it did Hispanic youth.

Ethnicity differences in health related youth outcomes have been reported in previous studies (Gordon-Larsen, Adair, & Popkin, 2003; Ogden, Flegal, & Carroll, 2002; Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006; Shanklin, Brener, Kann, Griffen-Blake, Ussery-Hall, Easton, Barrett, Hawkins, Harris, & McManus, 2008; Vieweg, Johnston, Lanier, Fernandez, & Pandurangi, 2007). While obesity rates are increasing across all demographic categories, low-income and minority youth are disproportionally affected by the obesity epidemic. For example, obesity levels were estimated as early as four years of age at 31 percent among American Indian/Native Alaskan children, 22 percent for Hispanics, 21 percent in African-Americans, as compared with 16 percent of Whites (the estimate for Asians was 13 percent) (Anderson and Whitaker, 2009). And several recent studies suggest a significant correlation between obesity and low socioeconomic status (Vieweg et.al., 2007; Isaacs & Shroeder, 2004; Gordon-Larsen et. al., 2003; Wang & Beydoun, 2007). So, a third impact question addressed in this study is whether or not the impacts of Triple Play also vary by ethnicity.

The impact of Triple Play on eating and physical activity outcomes differed by ethnic group. For the number of healthy foods eaten, Hispanic youth were the only group not to benefit from Triple Play; Hispanic youth also were less physically active than their African-American or White peers (Figures 5.1, 5.2, and 5.3). Both African-American and White youth in Triple Play Clubs showed a smaller decline over time in the number of healthy foods they ate than did their control Club counterparts. In contrast, Hispanic youth in both the treatment and control Clubs increased the number of healthy foods eaten by the end of the study so there was no significant impact for this group. Hispanic youth also benefitted in regard to eating breakfast (showing a much smaller decline in frequency of breakfast eating). There was no overall impact in this area for any other ethnic subgroup.

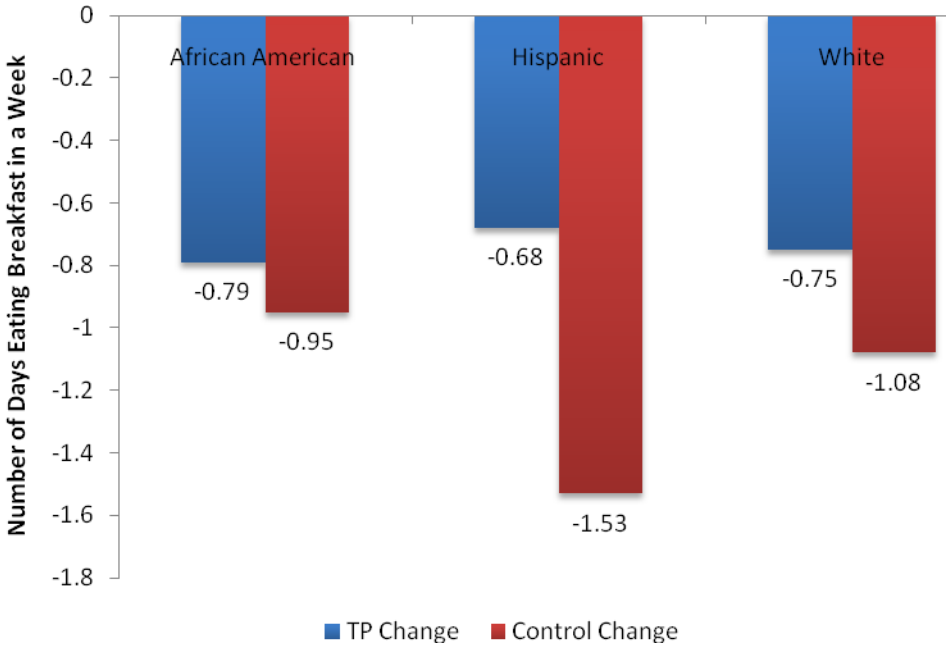
The amount of time spent exercising shows that Triple Play youth of all three ethnic groups increased time spent while their control Club peers exercised less by the end of the study (Figure 5.3).However, the difference for the Hispanic youth was smaller than for the African-American or White youth (a 10 minute differential for Hispanic youth vs. 15 minutes for White and for African-American youth).

FIGURE 5.1: Changes in Healthy Foods Eaten by Ethnic Group



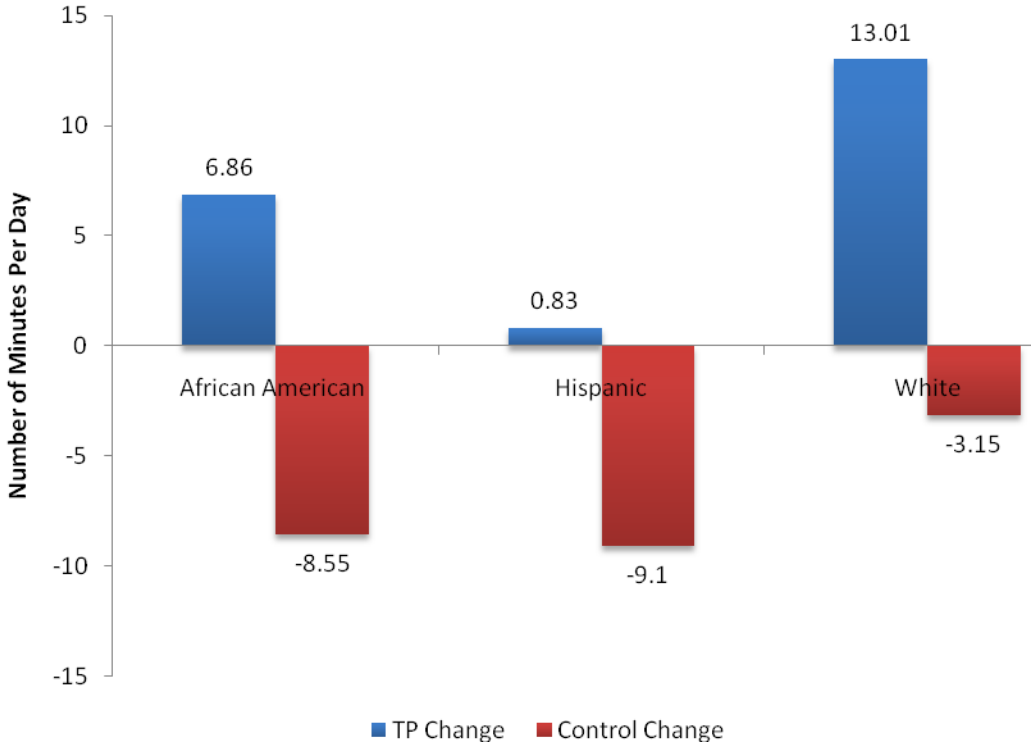
Note:Triple Play Youth:African-American, N = 177; White, N = 162; Hispanic N = 61; Control Group: African-American, N = 86; White, N = 66; Hispanic, N = 22.

FIGURE 5.2: Changes in Frequency of Breakfast Eating by Ethnic Group



Note: Triple Play Youth: African-American, N = 177; White, N = 162; Hispanic N = 61; Control Group: African-American, N = 86; White, N = 66; Hispanic, N = 22.

FIGURE 5.3: Changes in Amount of Daily Exercise by Ethnic Group

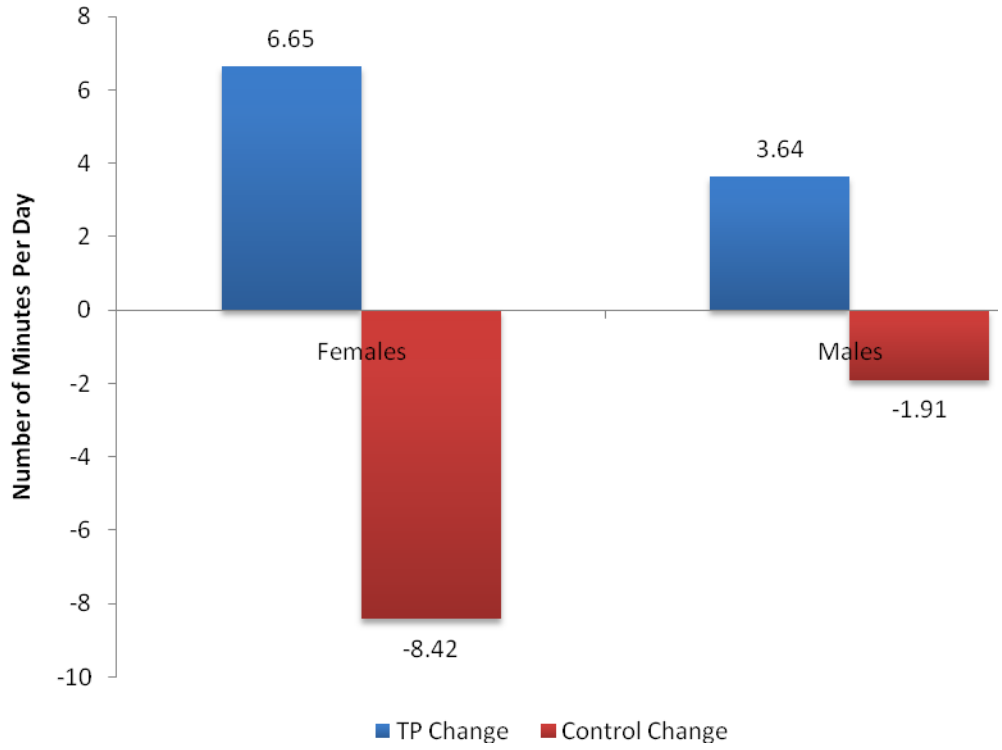


Note: Triple Play Youth: African-American, N = 177; White, N = 162; Hispanic N = 61; Control Group: African-American, N = 86; White, N = 66; Hispanic, N = 22.

Key Finding 14: Triple Play most significantly benefits girls in two ways: they exercise an average of two hours more per week than their control group counterparts; and they are more likely to have high levels of mastery and control.

It is well documented that adolescent girls are less physically active and participate in physical education less than their male counterparts (Gordon-Larsen, 2009; Trost, Pate, & Dowda, 1996; Trost, Pate, Sallis, Freedson, Taylor, Dowda, & Sirard, 2002). This can be particularly problematic if it leads to obesity for girls as some research indicates that obesity among adolescent females is associated with both lower status attainment and a higher prevalence of depressive symptoms in young adulthood (Merten Wickrama, & Williams, 2008). Triple Play did have a greater impact for girls on the average number of minutes spent exercising per day (Figure 5.4) but not for the number of healthy foods eaten the previous day or for eating breakfast.

FIGURE 5.4: Changes in Amount of Daily Exercise by Gender

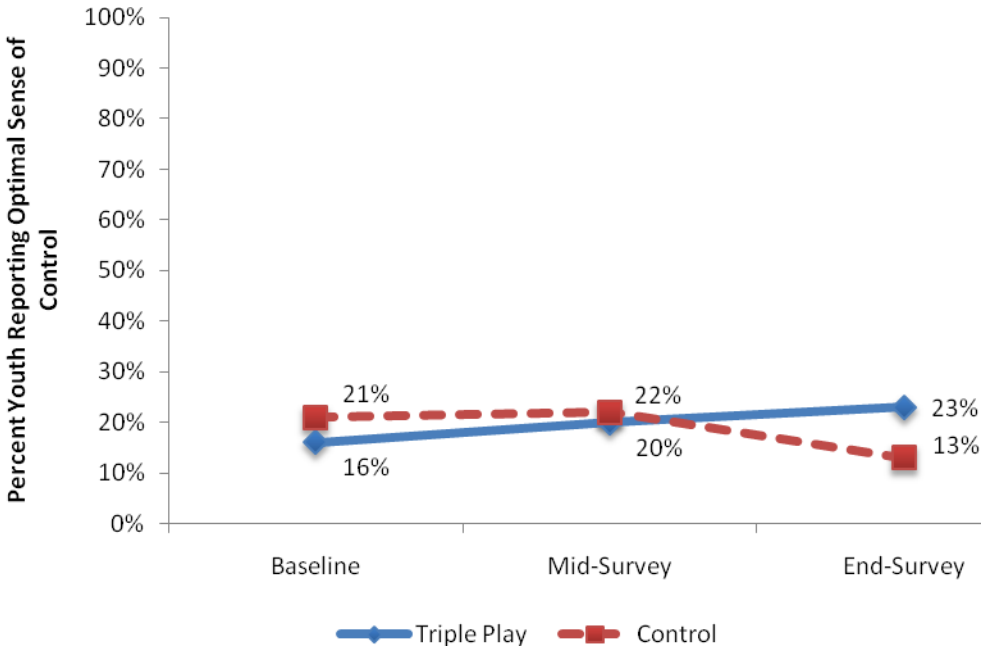


Note: Triple Play Youth:Males, N = 264; Females, N = 243; Control Group: Males, N = 112; Females, N = 108.

The impact for girls on physical activity shows Triple Play girls increased their physical activity level by nearly seven minutes a day while control Club girls declined more than eight minutes a day – for a net difference of about 15 minutes more exercise per day for Triple Play girls by the end of the study. Triple Play girls, by the end of the study, are engaging in nearly two hours more physical activity a week than their control peers. This effect was more moderate for boys, who increased their activity levels by approximately three and one-half minutes a day—which translates roughly into slightly less than an additional half-hour of physical exercise a week.

Of particular interest are the results of mastery and control by gender. These show (see Figure 5.5) that the Triple Play impact is quite striking for girls who can be very vulnerable in this area during adolescence. While the proportion of Triple Play girls with high levels of mastery and control increases by seven percentage points (from 16 percent to 23 percent) the proportion of girls in control Clubs at this level decreases by eight percentage points (from 21 percent to 13 percent).There was no significant impact for gender on quality of peer relationships.

FIGURE 5.5: Impact of Triple Play on Girls' Sense of Mastery and Control

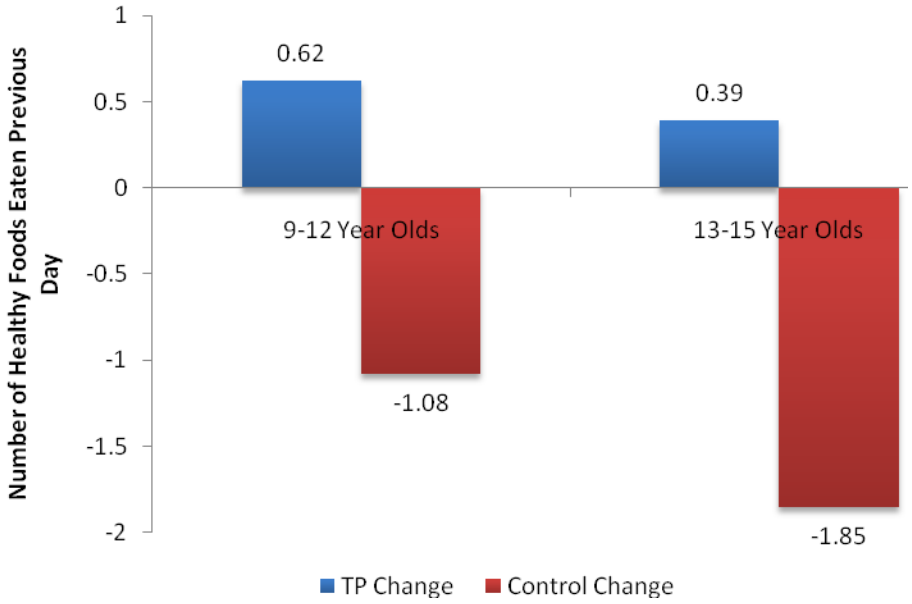


Note: Triple Play Females, N = 243; Control Club Females, N = 108

Key Finding 15: While youth of all ages benefitted from Triple Play, older youth – aged 13 and up – benefitted the most.

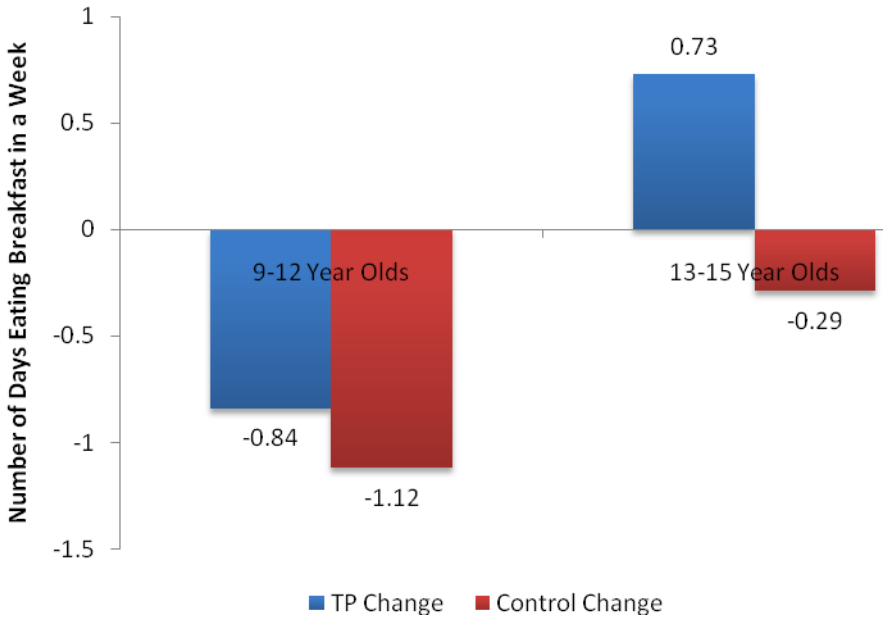
Figures 5.6 through 5.8 show the impacts of Triple Play for younger and older Club members on (1) number of healthy foods eaten (Figure 5.6); (2) number of days reported eating breakfast (Figure 5.7); and (3) the average number of minutes exercising per day (Figure 5.8).Younger Club members were those youth between the ages of 9 and 12 at baseline, while older Club members were those youth between the ages of 13 and 15 at baseline.

FIGURE 5.6: Changes in Number of Healthy Foods Eaten by Age



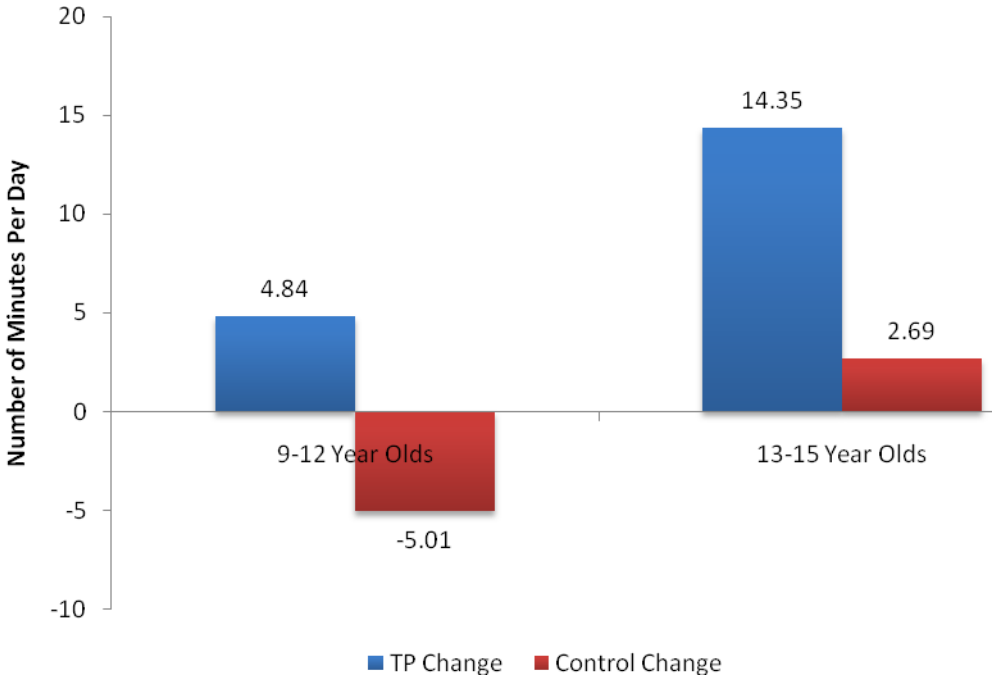
Note: Triple Play Youth:9-12 year olds, N = 302; 13+ year olds, N = 205; Control Group: :9-12 year olds, N = 151; 13+ year olds, N = 69

FIGURE 5.7: Changes in Frequency of Eating Breakfast by Age



Note: Triple Play Youth: 9-12 year olds, N = 302; 13+ year olds, N = 205; Control Group: :9-12 year olds, N = 151; 13+ year olds, N = 69

FIGURE 5.8: Changes in Amount of Daily Exercise by Age



Note: Triple Play Youth: 9-12 year olds, N = 302; 13+ year olds, N = 205; Control Group: 9-12 year olds, N = 151; 13+ year olds, N = 69

There was a significant, but small, differential impact for younger and older youth in the number of healthy foods eaten (see Figure 5.6), how often they ate breakfast (see Figure 5.7) and in the average number of minutes in which youth report engaging in physical exercise (see Figure 5.8) With respect to the number of healthy foods eaten, the impact was slightly stronger for older youth, although both older and younger Triple Play youth showed gains relative to their control peers' declines in the number of healthy foods eaten.

For breakfast eating, there was no impact for younger youth, but a moderate impact for older youth. Younger youth in both Triple Play and control Clubs tended to drop off eating breakfast about one day by the end of the study. However, older youth in Triple Play Clubs increased their days eating breakfast about three-fourths of a day on average, while older youth in control Clubs showed a slight decline.

With respect to the average number of minutes spent engaged in physical activity, both younger and older youth in Triple Play Clubs reported significant increases compared to their control group peers who either declined or increased slightly their physical activity level. Older youth showed a substantial increase in the number of minutes they were physically active relative to younger youth (14.4 minutes versus 4.8 additional minutes), but the net change compared to control youth was similar for both age groups.

Triple Play impacts Mind, Body and Soul outcomes for youth, and some youth receive even greater benefit than others. We now discuss Triple Play impacts on Club-level outcomes, particularly as they relate to Club and program participation, the healthy eating supports provided by Clubs and the general developmental quality of the activities that youth engage in at the Clubs.

CHAPTER 6: IMPACTS ON CLUB-LEVEL OUTCOMES: PARTICIPATION, SUPPORTS FOR HEALTHY EATING AND DEVELOPMENTAL QUALITY

Chapters 2 through 5 demonstrated that Triple Play has significant and sometimes substantial impacts on youth with respect to their eating and exercise patterns, and to a lesser degree on positive peer relationships and a strong sense of mastery and control. This section focuses on the impacts of Triple Play on the Club-level outcomes that were part of the initial designer's theory of change (see Figure 6.1).These Club-level outcomes include: increasing enrollment, increasing youth participation, both in the Club overall and in healthy activities; other supports provided by Clubs to facilitate healthy living, specifically the degree to which Clubs provide healthy food choices and; and the general developmental quality of the activities that youth experience, specifically supportive relationships, physical and emotional safety, opportunities for building new skills and participation in leadership and decision-making.

Table 6.1 shows a summary of the impacts on these outcomes. Three key findings are illustrated in Table 6.1:

- *Triple Play ameliorates declines in general Club attendance and increases participation in physical activities offered by the Club*. In particular, youth attend the Club more frequently in Triple Play Clubs (showing significantly fewer declines in attendance patterns) and also participate in more structured physical activities offered by the Club than youth in the control Clubs.

- *Triple Play Clubs provide significantly more supports for healthy eating than do control Clubs.* In Triple Play Clubs, youth are more likely to be offered healthy snacks and also report learning more about making healthy food choices at the Club than do youth in control Clubs.

- *Triple Play improved the degree to which youth experienced supportive relationships, a sense of physical and emotional safety and opportunities for skill-building and leadership*. The developmental quality experienced by youth at both Triple Play and control Clubs was about the same at the beginning of the study. Triple Play youth, however, experienced increases in the quality of supportive relationships, physical and emotional safety, and in skill-building and leadership opportunities over the course of the study.

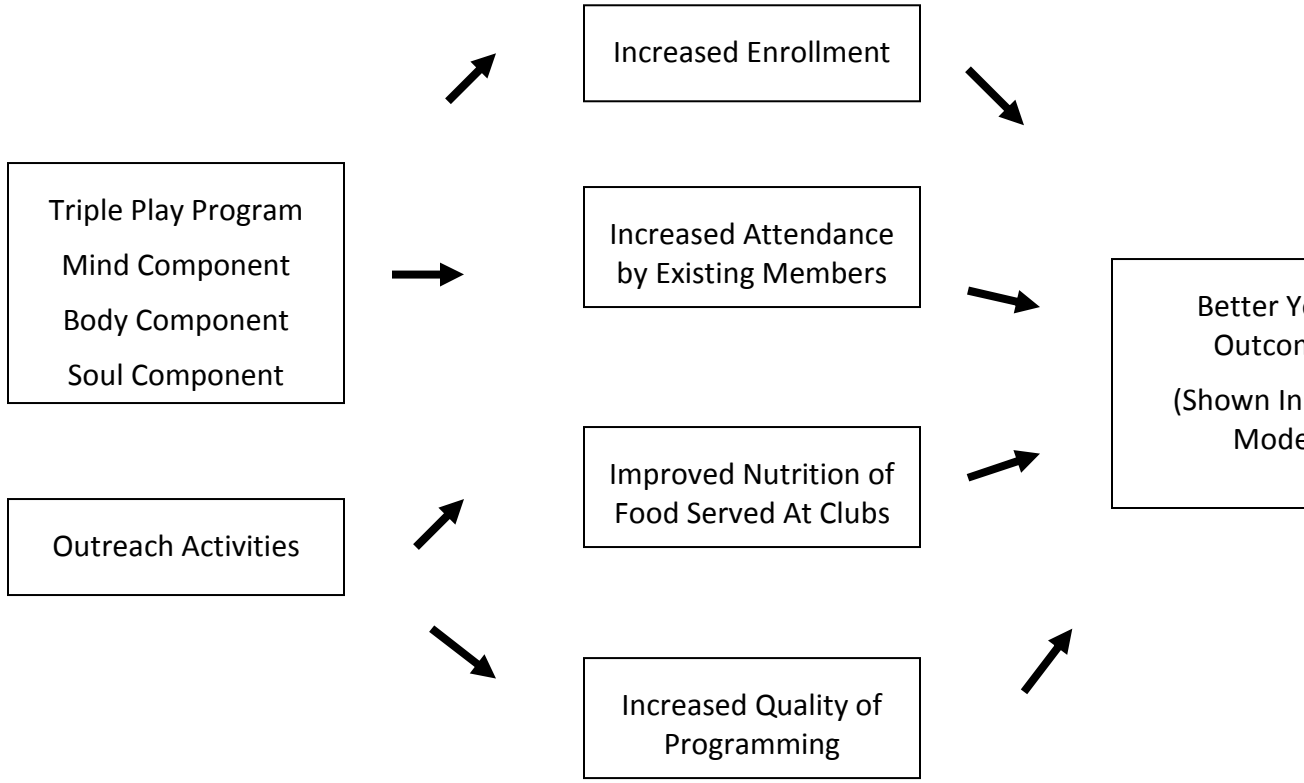

Increased Enrollment
Triple Play Program
Mind Component
Body Component
Soul Component
Increased Attendance by Existing Members
Better Y
Outcon
(Shown In
Mode
Improved Nutrition of Food Served At Clubs
Outreach Activities
Increased Quality of Programming

Table 6.1: Impacts of Triple Play on Club-Level Outcomes

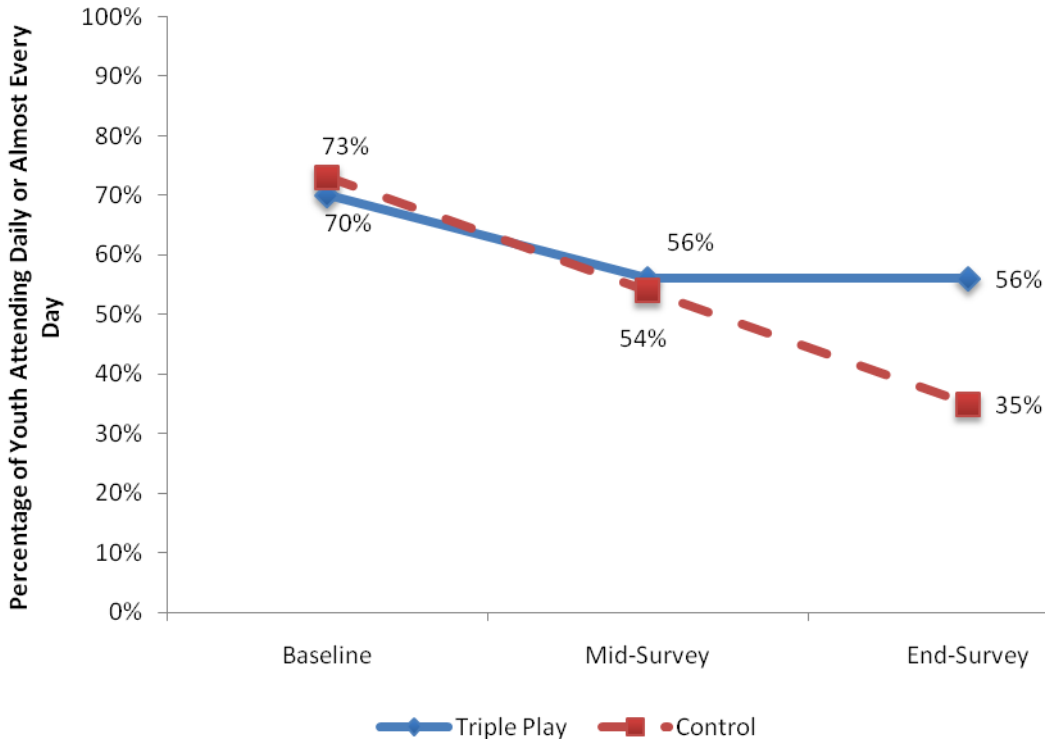
Youth Participation	Impact
Frequency of youth attendance at Club	↗↗
Youth participation in physical activities offered at Club	↗
Support for Healthy Eating	**Impact**
Type of food offered to youth at Club	↑↑
Teaching healthy food choices at the Club	↑
Quality of Developmental Supports and Opportunities	**Impact**
Supportive relationships	↑↑
Physical and emotional safety	↑
Opportunities for participation in skill-building activities	↑
Opportunities for participation in leadership and decision-making	↑

Key Finding 16: Triple Play slows declines in general Club attendance and increases participation in physical activities offered by the Club.

The theory behind Triple Play was that its implementation would increase participation in Clubs, increase the quality of that participation and ultimately increase enrollments. We were unable to assess the effect of Triple Play on overall enrollment because there were inconsistencies in the way Clubs reported that information. However, measures of attendance frequency and activity participation were assessed using the youth survey. With respect to attendance frequency, youth were asked how often they typically come to the Club (responses ranging from not at all to every day).For participation in physical activities, youth were asked how many activities they participated in at the Club (example activities included jump rope, swimming, gymnastics, soccer, basketball, walking/jogging).

The results show an impact on frequency of participation in Triple Play and control Clubs. While the proportion of youth participating every day or almost every day declined over the course of the study for both groups of youth, it dropped significantly less for Triple Play Clubs (from 70 percent to 56 percent) than for control Clubs (from 73 percent to 35 percent) (See Figure 6.2).

FIGURE 6.2: Impact of Triple Play on Frequency of Club Attendance

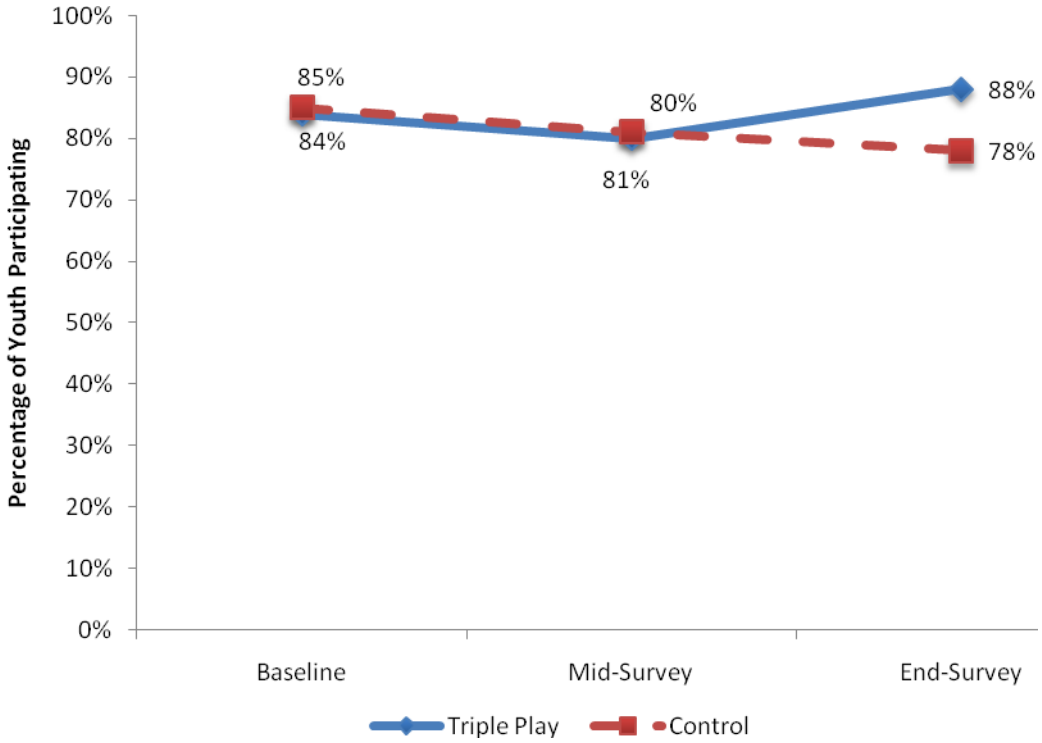


Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

We also examined the average number of physical activities youth participated in at the Clubs to explore whether or not Triple Play had an impact by providing more opportunities to youth to be active on a daily basis (beyond team sports when in season). Figure 6.3 shows that Triple Play Clubs managed to keep more youth engaged in physical activities. There was a significant impact in the Triple Play Clubs from baseline to the end survey in the proportion of youth who participated in physical activities at the Clubs (e.g., jump rope, home run challenges, tag, walking, biking, jogging/running, aerobics, baseball/softball, football and basketball, dance, karate, soccer, wrestling, volleyball and hockey) during the week before the survey.

In fact, while the levels dropped for the control Clubs, they stayed the same or increased for Triple Play Clubs. This indicates that even as youth age and have more competing demands on their time, a program like Triple Play can help preserve youth's participation in physical activity during a developmental period when youth tend to become more sedentary (Nader, 2009).

FIGURE 6.3: Impact of Triple Play on Participation in Physical Activities



Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

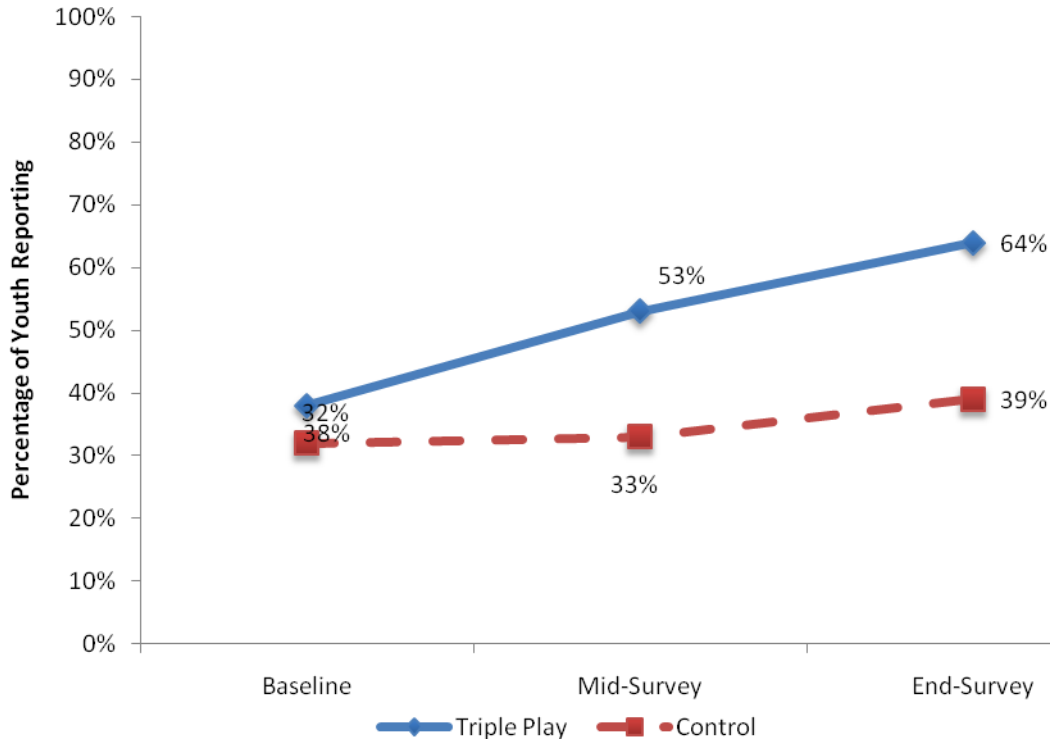
Key Finding 17: Triple Play Clubs provide significantly more supports for healthy eating than do control Clubs.

A key aspect of encouraging youth to engage in healthier eating habits is modeling appropriate food choices. It is unreasonable to expect that youth will learn to choose healthy foods if all that is provided to them are chips, regular sodas and candy. As described in Chapter 2 of this report, Triple Play Clubs make a concerted effort to improve the quality of food offerings – both with respect to organized snacks, and also the optional vending machine choices available to youth. Triple Play Clubs also encourage healthy choices through direct instruction of the Healthy Habits curriculum. Therefore, to the degree that youth report learning about making healthy food choices at the Club, there is evidence that the program is being implemented. Measures of food quality and learning about healthy food choices were derived from the youth survey, where they

were asked what types of foods were available to them at the Club and where they learned information about making healthy food choices.

There were much greater increases for Triple Play than control Clubs in how often youth were provided healthy food choices as a snack when at the Club (Figure 6.4) (32 percent growth in treatment Clubs vs. 9 percent growth in control Clubs). This confirms what we observed at Triple Play Clubs – healthier foods being offered at snack time. There was no significant difference in the amount of unhealthy food being offered to youth in treatment and control Clubs at the end of the study. This finding suggests that Clubs are changing their snack offerings by supplementing less healthy choices with more healthy ones, rather than replacing the unhealthy snacks. Youth still have access to regular sodas, candy, chips and other less healthy alternatives.

FIGURE 6.4: Impact of Triple Play on Percentage of Healthy Food Offered at Club

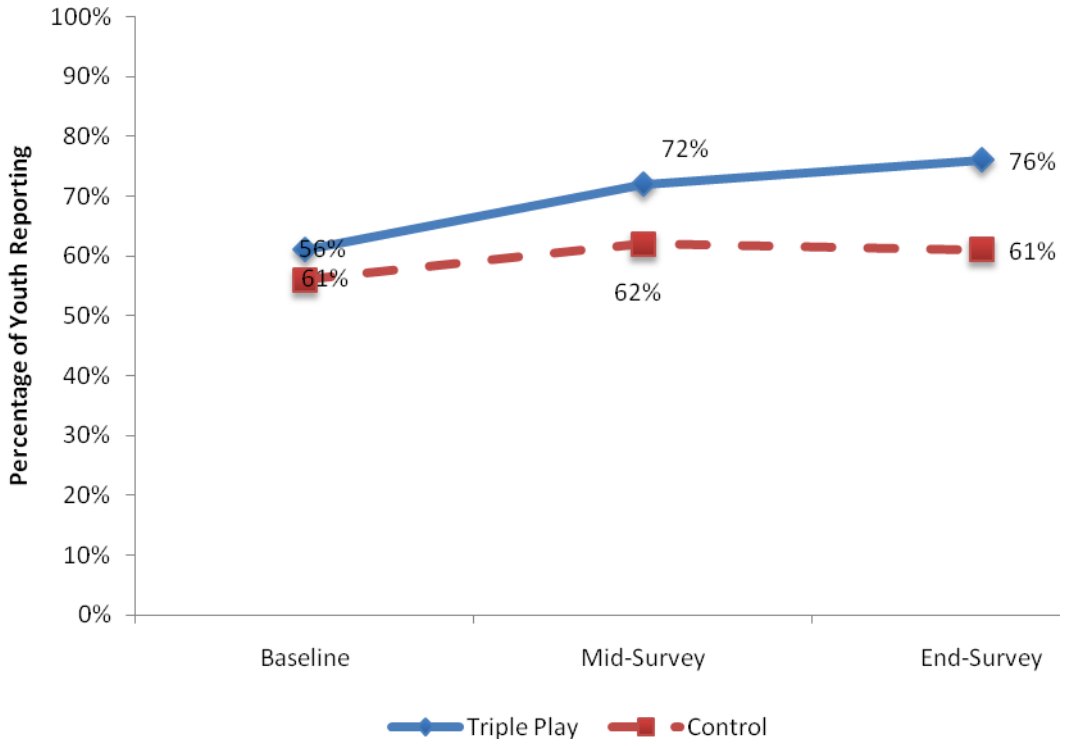


Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

In Triple Play Clubs, there is an intentional effort to teach youth to make healthy food choices. This teaching may occur through the Healthy Habits curriculum, or through posters on the walls, staff modeling good choices, or peers teaching each other about healthy eating. Figure 6.5 shows the percentage of youth in Triple Play and control Clubs who report they learned about healthy food choices at the Club. According to Figure 6.4, an additional 20 percent of Triple Play youth said they learned about healthy food choices at the Club (from 56 percent to 76 percent), while the percentage of control Club youth reporting learning about making healthy food choices

remained virtually unchanged. These findings suggest that over the course of the study, Triple Play Clubs are making a concerted effort to provide information to youth about eating more healthy foods and the benefits of these choices.

FIGURE 6.5: Impact of Triple Play on Youth Learning Healthy Choices at Club



Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

Key Finding 18: Triple Play improved the degree to which youth experienced supportive relationships, a sense of physical and emotional safety, and opportunities for skill-building and leadership.

The levels of supports and opportunities youth experience while in the Clubs were measured in this study for two reasons. First, these measures can be viewed as indicators of the general youth development quality of a setting. If the treatment and control Clubs had differed on these measures at the outset of the study, we would have had concerns about how alike (or equivalent) the two groups were. However, we found no differences on these measures at baseline.

Second, we measured the supports and opportunities because they have been shown in research to be linked to better short- and long-term outcomes for youth as they mature. We hypothesized that the Triple Play model could affect these features of the Club experience through changing the intensity of activity and participation at the Club and the nature of relationships with adults and peers. This is an important impact to track since any program that can boost the developmental richness of a setting where youth spend significant time has the potential to contribute to better developmental and long-term outcomes for youth.

The threshold method of analysis is also used here to examine these outcomes. That is, a "high" level is set on each outcome that is associated with better longer-term outcomes; and a "low" level is set on each outcome that is associated with worse longer-term outcomes. As with earlier outcomes (such as mastery and control), improvements can be either in increasing the proportion of youth receiving high levels of these supports or in decreasing the proportion receiving low levels.

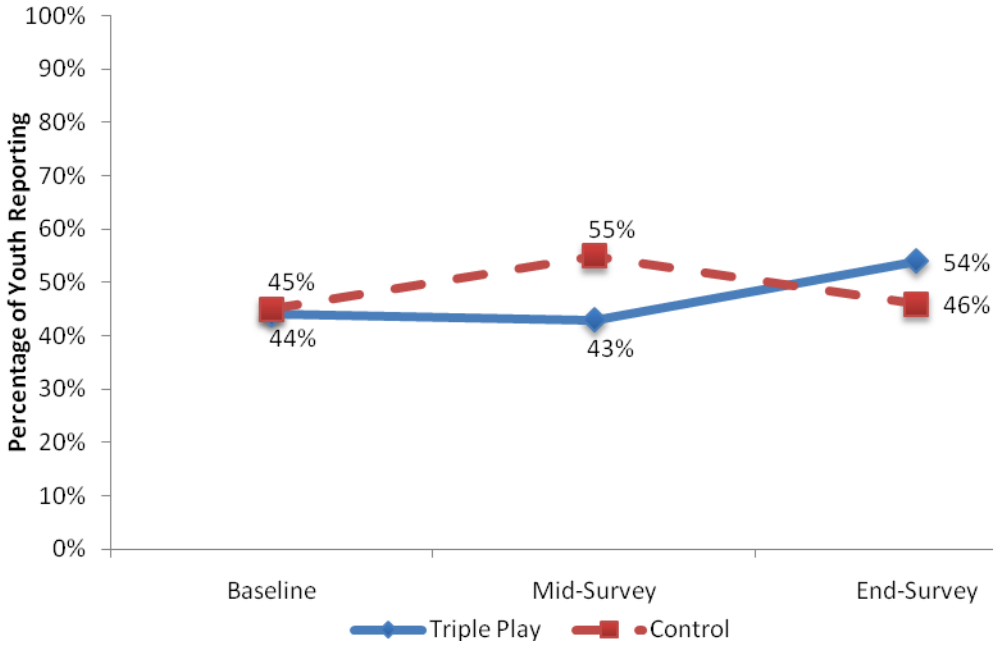
Supportive Relationships

Triple Play has a positive impact on the degree to which youth experience positive supportive relationships at the Club (see Figure 6.6). While both Triple Play and control Club youth start out at about the same level with slightly less than half of their members reporting positive supportive relationships, by the end of the study, Triple Play Clubs showed a 10 percentage point increase (to 54 percent) compared to a slight gain of one percent for control Clubs (45 to 46 percent).

The impact of Triple Play on positive supportive relationships differs for boys and girls, as well as for Hispanic youth. Figure 6.7 shows the change in positive supportive relationships for males and females. There was a 22 percentage-point increase for Triple Play girls (compared to a slight decline for control Club girls), which was somewhat higher than for Triple Play boys, who showed a 16 percentage-point increase (compared to a slight increase for control Club boys).

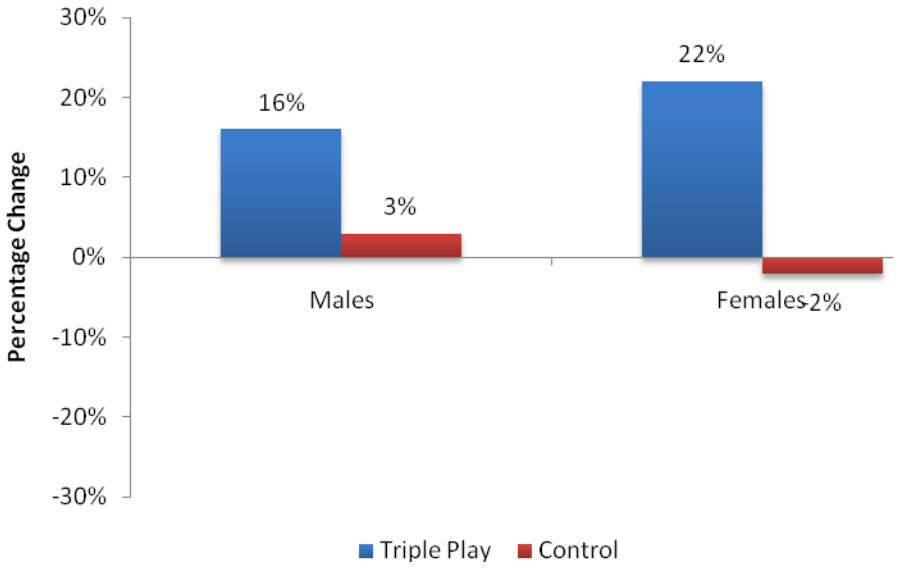
Figure 6.8 shows the changes in positive supportive relationships for African-American, Hispanic and White youth. While all three groups showed significant increases in positive supportive relationships in Triple Play Clubs (between 11 and 19 percent increase), Hispanics showed a much larger gain relative to their control group peers. While African-American and White control Club youth did not show much change in the percentage reporting positive supportive relationships, Hispanic youth in control Clubs showed a significant decline of 8 percentage points.

FIGURE 6.6: Impact of Triple Play on Percentage of Youth Experiencing High Levels of Supportive Relationships



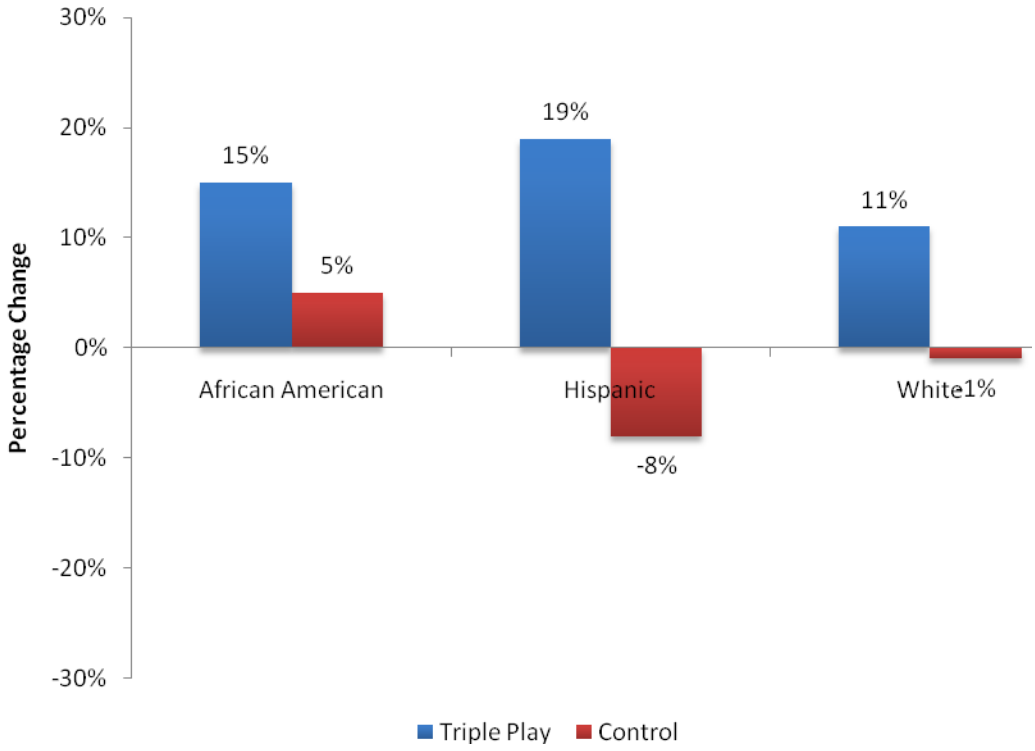
Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

FIGURE 6.7: Changes in Positive Supportive Relationships by Gender



Note: Triple Play Youth: Males, N = 264; Females, N = 243; Control Group: Males, N = 112; Females, N = 108

FIGURE 6.8: Changes in Positive Supportive Relationships by Ethnic Group



Note: Triple Play Youth: African-American, N = 177; White, N = 162; Hispanic N = 61; Control Group: African-American, N = 86; White, N = 66; Hispanic, N = 22

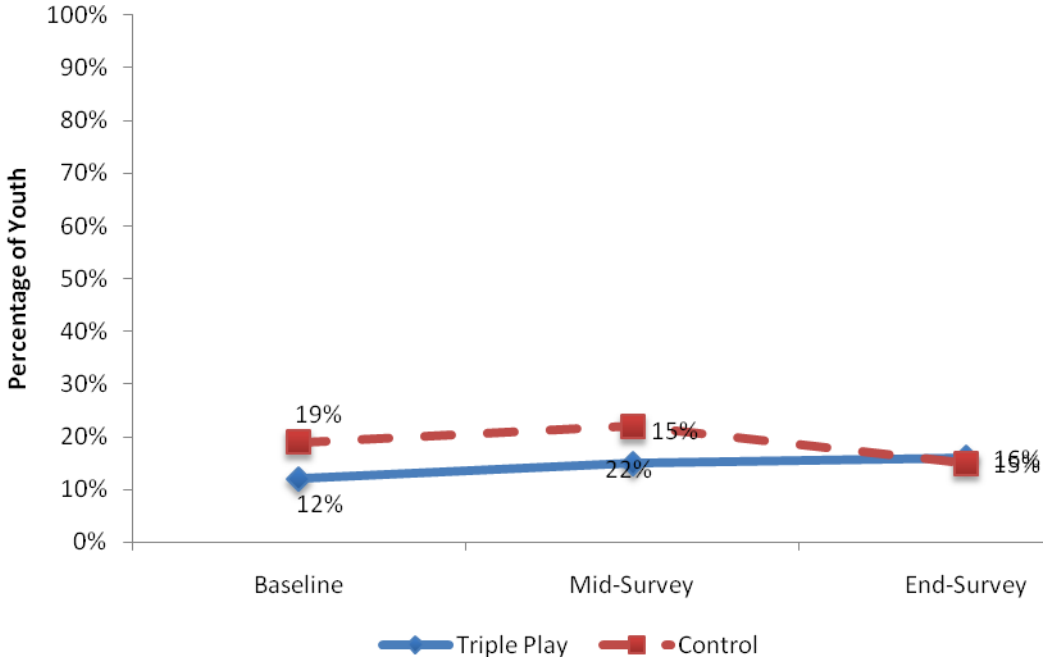
Physical and Emotional Safety

The measure of safety used in this study combines perceptions of physical and emotional safety while at the Club. Typically, the percentage of youth in community organizations who report experiencing high levels of safety is quite low[11]. As shown in Figure 6.9, there is a small impact associated with Triple Play in the percentage of youth who report feeling very physically and emotionally safe at the Club. Youth in Triple Play Clubs show a small, steady increase in the percentage that report experiencing high levels of safety (from 12 percent to 16 percent) while youth in control Clubs showed a slight decrease of 4 percentage points.

The impact of Triple Play on youths' experience of physical and emotional safety differs for boys and girls. Figure 6.10 shows the change in positive supportive relationships for males and females. There was a 12 percentage point increase for Triple Play girls (compared to a slight decline for control Club girls), which was somewhat higher than for Triple Play boys who showed a 9 percentage point increase, but were not different than control Club boys (8 percentage point increase).

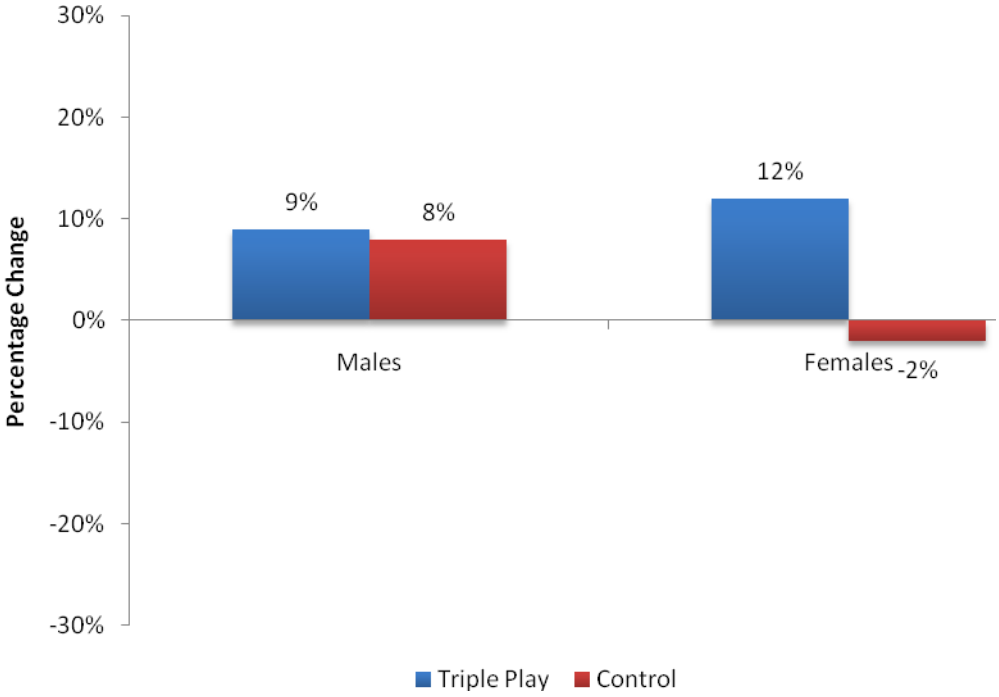
[11] *This measure has been used by YDSI in over 250 organizations with approximately 20,000 youth participants. The average percentage of youth experiencing high levels of safety is 20%.*

FIGURE 6.9: Impact of Triple Play on Percentage of Youth Experiencing High Levels of Safety



Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

FIGURE 6.10: Changes in High Physical and Emotional Safety by Gender



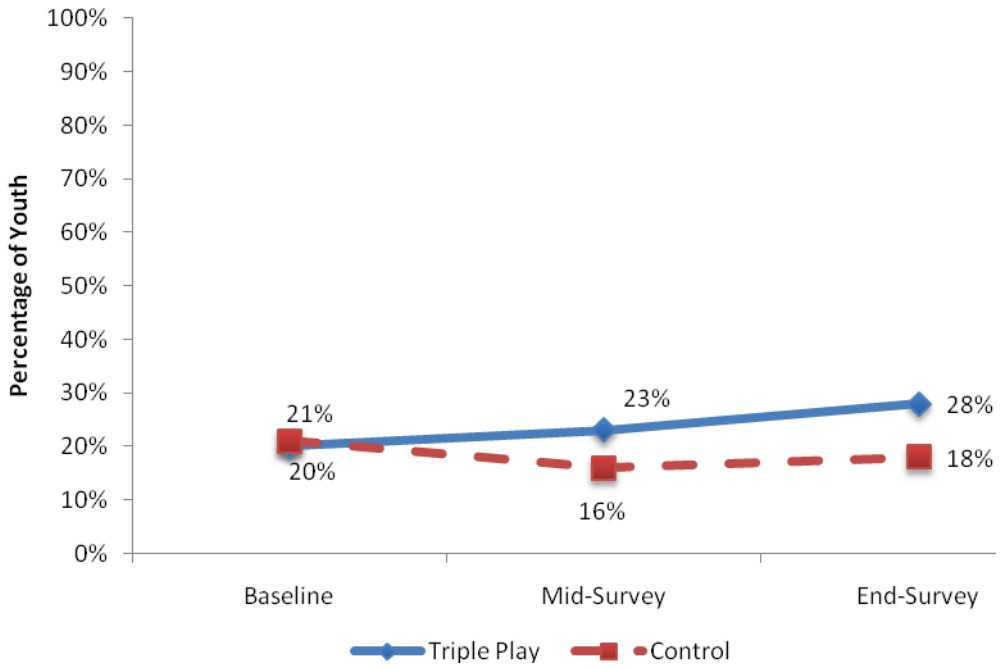
Note: Triple Play Youth: Males, N = 264; Females, N = 243; Control Group: Males, N = 112; Females, N = 108

Opportunities for Skill Building and Leadership/Decision Making

The last two dimensions of developmental quality assessed were opportunities for skill building and for youth to be engaged in leadership and decision making at the Club. Both of these outcomes showed a small, but significant impact for youth in Clubs that implemented Triple Play.

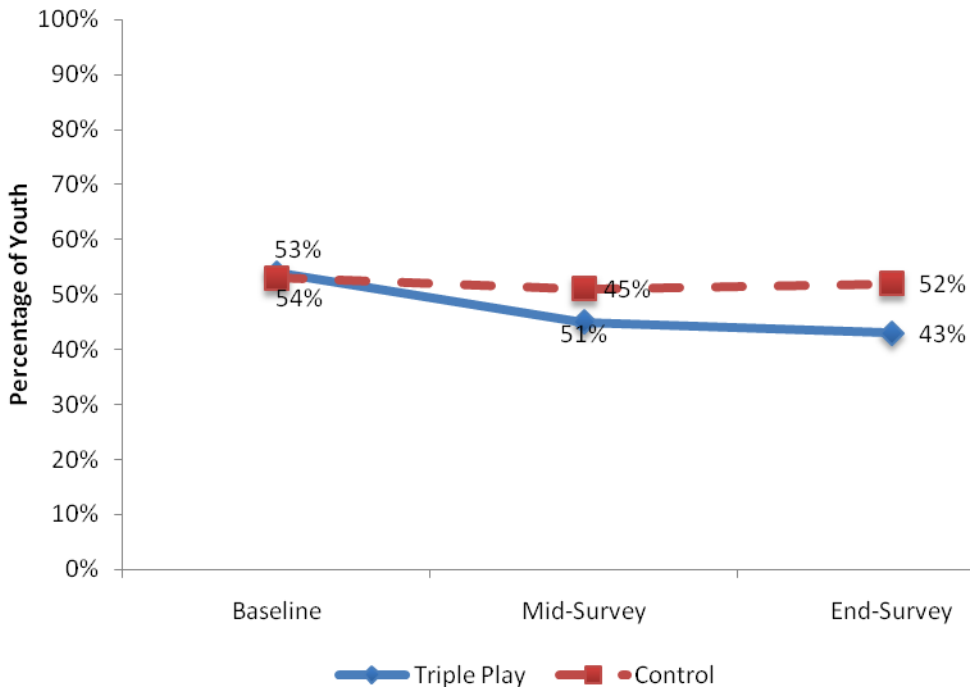
According to Figure 6.11, there is a small impact associated with Triple Play in the percentage of youth who report they were able to participate in skill building opportunities at the Club. Youth in Triple Play Clubs show a small, steady increase in the percentage that report experiencing high levels of skill building (from 21 percent to 28 percent), while youth in control Clubs showed a slight decrease of two percentage points. These results may suggest that youth are developing new physical skills as a result of participating in Triple Play activities. A similar impact can be seen in Figure 6.12 for opportunities to participate in decision making and leadership at the Club. Youth in Triple Play Clubs show a decline in the percentage that report experiencing low levels of decision making and leadership opportunities (11 percent) while youth in control Clubs showed a smaller decrease of one percent.

FIGURE 6.11: Impact of Triple Play on Percentage of Youth Experiencing High Levels of Skill Building



Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

FIGURE 6.12: Impact of Triple Play on Percentage of Youth Experiencing Low Levels of Youth Leadership/Decision Making



Note: Triple Play Youth, N = 507, Control Club Youth, N = 220

CHAPTER 7: DISCUSSION

This study demonstrated a range of impacts on health-related knowledge and behaviors for youth, and on organizational outcomes for participating Clubs. However, the overarching finding is the demonstrated effectiveness of a developmental approach to improving youth's trajectories on outcomes with direct and significant social implications – health and social psychological well-being. The longer-term negative outcomes that can be potentially prevented with this approach, e.g., obesity, poor nutrition, depression, cigarette smoking, etc., have expensive and wide-reaching societal implications. The longer-term positive outcomes that can be potentially fostered with this approach may have broad implications for quality of life issues, e.g., a habit and enjoyment of physical exercise, healthy nutrition, good peer relationships and good mental health.

Who Benefited Holds Important Lessons

What is in some regard most remarkable about these results is the strength and consistency of impacts given the type of program model implemented. The approach here was to infuse the Club environment with supports and opportunities for engaging physical activities, healthy nutrition and positive peer influences rather than to design stand-alone activities targeted at the outcomes of interest. In addition, these findings are consistent across a range of Clubs, all of which had different Triple Play implementation styles and approaches, and served a diverse population of youth across the country. These Clubs also had varying degrees of resources available to them. Combined, these factors suggest that Triple Play has sustainability as a program that can produce impacts under a wide range of conditions.

The program did not target individual youth who were already at-risk or who were overweight or had poor nutrition. Rather, it took a holistic approach to incorporating healthy activities that were attractive to youth, into a youth-focused, developmentally oriented environment. Nevertheless, a consistent pattern in the findings is that the youth who were more at-risk, or more in need, prior to the implementation of Triple Play seem to derive the greatest benefits from the program. The least active, unhealthy eaters with lower levels of peer support were more significantly impacted by the Triple Play components than their healthier peers. But happily, Triple Play also showed a protective effect for youth who started with healthy habits – it protected them from the declines in physical activity and nutrition that were demonstrated by youth not in the program as they aged. So it can also help prevent youth from becoming sedentary, unhealthy eaters.

There were notable impacts of this program for girls. They benefitted the most in terms of the positive impact shown on levels of physical activity. And they also benefitted the most in terms of high levels of mastery. The proportion of Triple Play girls with high mastery increased while the proportion of control girls in this group declined. Given the linkage between high levels of mastery and lower levels of depression for adolescent girls this is an important effect.

While this study did not have as refined participation data as might be desired, it also suggests that more frequent participation in these activities leads to better outcomes. Youth who participated in activities twice a week or more were more likely to derive the benefits of the program than were those participating less regularly. This highlights the need for out of school programs to be available – and attractive – enough so that young people can, and will, participate routinely.

Control Groups Are Critically Important In Evaluating Out-Of-School Settings

Another important aspect of these results is that they, again, highlight the importance of using an experimental design to evaluate youth programs. Many afterschool programs and community-based organizations are designed to influence a larger social group, rather than disparate individuals. Like the programs at Boys & Girls Clubs, activities are integrated into an existing program or organization and the random assignment of youth to treatment and control groups is neither feasible nor desired. The type of randomized cluster design used here is especially appropriate for these types of interventions and programs; and it preserves the power of random assignment without having to distort the delivery of program services.

Many of the impacts found here would not have been detected without the control group data. When youth's outcomes decline in the absence of a program, and youth in the program maintain existing levels of the outcome, the only way to detect these benefits is with a control group – or by demonstrating the "counterfactual" – what would have happened in the absence of the program. Without a point of comparison we run the risk of underestimating the value of programs and interventions – especially for youth – since we often do not have data on what trajectories outcomes of interest may take during a period of so much developmental change. This methodology is increasingly being adopted by educational researchers for the same reasons.

Remaining Questions

Some further research that would add to our understanding of this approach is to explore whether this model would work in other afterschool settings. Boys & Girls Clubs have a specific culture that combines physical activity, games and instruction, where participants experience both structure and free play. More singular programs and settings may or may not have the same results.

It would also be beneficial to the field to know whether there are specific threshold levels of participation that are needed to achieve these effects. How often do youth need to be exposed to an environment that intentionally supports healthy behaviors in order for them to benefit? How many weeks are needed to achieve the desired outcomes?

Even without the answers to these questions, it is clear that wide implementation of the Triple Play model represents an opportunity to impact the health of a significant number of our nation's youth.

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TECHNICAL APPENDIX A: STUDY METHODOLOGY

In this appendix, we provide technical details about the research design itself, including the selection and assignment of Clubs to treatment and control groups, a description of the youth participants in the study, a description of the measures used in the study, and the analytic techniques used to answer the research questions set out in Chapter 1.

Study Design

A cluster-randomized trial (CRT) design was used to examine the impact of Triple Play on youth. In this design, existing groups of individuals (e.g., clusters or Clubs, schools, classrooms), rather than the individuals themselves, are randomly assigned to treatment and control conditions. This design is especially appropriate for interventions and programs that serve whole groups, rather than individuals. Many social interventions, such as those in afterschool programs and community-based organizations, are designed to influence a larger social group, rather than disparate individuals. These programs also tend to be place-based in that the programs are constrained to existing organizations and places – that is, the intervention is not going to create new organizations or locations. CRTs have been increasingly used in the evaluation of such place-based initiatives for adolescents, such as smoking, drinking and sex prevention programs (Flay, 2000), community health-promotion initiatives (Murray, 2005), whole school reforms (Cook, Murphy, & Hunt, 2000) and nutrition education (Murray, 1998).

In these situations, it is often practically infeasible to randomly assign individuals to one group or another ignoring these larger social structures. Boys & Girls Clubs are examples of holistic programs aimed at meeting the needs of youth and are often situated in the neighborhoods and communities in which these youth reside. Because the programs offered at the Clubs are integrated and youth are inter-related in many ways beyond the specific program being assessed, the random assignment of youth to treatment and control groups within a given Club risks significant "spill-over" effects, or contamination of the treatment by the close interaction of the youth in the Club (Bloom, 2005).In other words, it is very difficult to keep youth who are receiving a particular program separate and apart from their peers in the Club who are not receiving that program.

Given these practicalities and risks, the CRT design is a more feasible option – a research design that still conveys the advantages of experiments. Experimental designs offer the strongest internal validity of any research design (e.g., ability to ascribe differences between groups to a treatment or a program) because they distribute any systematic differences in individuals (or organizations) randomly across the groups. When an adequate number of individuals and/or organizations are included in the study population, this attribution ability becomes increasingly more stable.

One major challenge in using a CRT design is that while the methodological strengths of experimental design are maintained, the estimates of impact and group differences are less precise than in studies that randomly assign individuals, rather than groups, to treatment and control groups. Therefore additional strategies, such as using individual covariates in analyses (characteristics of the youth in the sample) are needed to increase the precision of these impact estimates (Bloom, 2005).In the current study, several youth-level characteristics (e.g., age, gender, ethnicity, frequency and length of Club attendance) were used as covariates to reduce the within-youth variation in the statistical models, therefore increasing the precision of the impact estimates.

Because the goal of the study was to examine the impact of Triple Play on youths' healthy eating and exercise behaviors and on their sense of mastery and control and quality of peer relationships, a longitudinal pre- and post-assessment design was implemented. Measures were collected at baseline (prior to Clubs implementing Triple Play), at the mid-point of the study to assess any intermediate growth, and at a final follow-up point to assess impact of the program. Using this design allows for establishing equivalence of the treatment and control groups at baseline, as well as for the assessment of developmental growth and change related to the program.

One major challenge in using a CRT design is that while the methodological strengths of experimental design are maintained, the estimates of impact and group differences are less precise than in studies that randomly assign individuals, rather than groups, to treatment and control groups. Therefore, additional strategies, such as using individual covariates in analyses (characteristics of the youth in the sample) are needed to increase the precision of these impact estimates (Bloom, 2005).In the current study, several youth-level characteristics (e.g., gender, ethnicity, frequency and length of Club attendance, and age) were used as covariates to reduce the within-youth variation in the statistical models, therefore increasing the precision of the impact estimates.

Club Selection and Sampling Frame

The sampling frame or group of Clubs eligible for the study was based on Boys & Girls Clubs who responded to a national office request for grant proposals for funding and program resources to implement the Triple Play program in their Clubs. Clubs that applied had not previously implemented Triple Play in their programming. The second year of grant applicants solicited in fall 2005 for 2006 implementation served as the pool of Clubs from which study Clubs were randomly assigned.

During the 2006 grant cycle, BGCA staff rated all Club applications for new Triple Play grants in each of five regions (Midwest, Southeast, Northeast, Southwest, and Pacific).The 18 top-rated Clubs from each region were included in the region-stratified population from which Clubs were recruited (for a total of 90 potentially eligible Clubs).

TABLE A.1: Clubs Assigned to Treatment and Control Conditions

Region	Treatment Sites	Control Sites
Midwest	Boys & Girls Clubs of Wayne County, Richard E. Jeffers Unit, Ind. Boys & Girls Clubs of Central Minnesota, Southside Boys & Girls Club, Minn. Ellsworth Air Force Base Youth Activities Center, S.D. Salvation Army Boys & Girls Club of Washington County, Ohio	Boys & Girls Club of Evansville, Ind. Whiteman Air Force Base Youth Center, Mo.
Northeast	Waterville Area Boys & Girls Club, Maine Winifred Crawford Dibert Boys & Girls Club of Jamestown, Inc., Jamestown Boys & Girls Club, Inc., NY. Boys & Girls Club of Western Broome, The Boys & Girls Club of Western Broome, Inc., N.Y. Boys & Girls Club of Brattleboro, Inc., 17 Flat Street Boys & Girls Club, Inc. Vt.	Boys & Girls Club of Trenton/Mercer County, N.J. Boys & Girls Clubs of Pawtucket, Alfred Elson, Jr. Branch, R.I.
Pacific	Fort Wainwright Youth Services, Alaska Boys & Girls Club of Carlsbad, Village Unit, Calif. Boys & Girls Club of Tustin, Calif. Mountain Home AFB Youth Center, Idaho	Boys & Girls Clubs of Whatcom County, Bellingham Unit, Wash. Boys & Girls Clubs of Naval Base Kitsap, Jackson Park Youth and Teen Center, Wash.
Southeast	Boys & Girls Clubs of Nash/Edgecombe Counties, Lucy Ann Bodie Brewer Unit, N.C. Boys & Girls Clubs of Mitchell County, Ga. Boys & Girls Clubs of Escambia, Fla. Boys & Girls Clubs of Wayne County, N.C.	Boys & Girls Club of Marion County, Fla. Boys & Girls Clubs of Greater Lee County, Potter-Daniel Boys & Girls Club, Ala.
Southwest	Boys & Girls Club of Craig, Colo. Boys & Girls Club of Ottawa County, Okla. Boys & Girls Clubs of Greater Fort Worth, East Side Branch, Texas Boys & Girls Club of Vernon, Texas	Boys & Girls Club of Corpus Christi, Boys & Girls Club of Corpus Christi, Texas Boys & Girls Club of Topeka, Auburn, Kan.

TABLE A.2: Club Demographics for Treatment, Control, and National Sample of Clubs

Membership Characteristic	Treatment Clubs *N=20*	Control Clubs *N=10*	Study Clubs |*N=30*	National Clubs *N=3,275*
Male	55.1%	57.9%	56.1%	55.2%
Minority (including Asian, African-American, Hispanic, Native American, and Multi-racial)	54.0%	67.4%	58.9%	67.6%
Receiving Free or Reduced Lunch	59.6%	68.7%	62.8%	63.6%
Ages 12 and or Under	66.2%	77.2%	70.1%	72.0%
Average Number of Club Memberships	751	702	733	635

Table A.2 shows the demographic characteristics of the set of treatment and control Clubs participating in the study compared to national Club statistics. Treatment Clubs were slightly lower minority status than control Clubs or Clubs nationally, and somewhat older in their membership. Clubs in both treatment and control conditions were larger (by about 100 members) than Clubs nationally.

Randomization and Selection

Within each region, the 18 Clubs were randomly assigned into one of three conditions:(1) treatment Clubs; (2) control Clubs; and (3) replacement Clubs.This third group of Clubs served as the pool of potential replacements for any Clubs in the other two groups who did not consent to participate.

For adequate statistical power (e.g., the ability to find an effect of Triple Play if it exists), it was determined that four treatment Clubs per region and two control Clubs per region would be used for a total of 30 study Clubs (20 treatment and 10 control Clubs).Clubs in each region were numbered one through 18 and a list of random numbers from one through 18 was generated. When a Club's number was selected, it was then randomly assigned to one of the three groups (treatment, control or replacement). Clubs were contacted in the order they were assigned and asked to participate in the study. If a treatment Club refused participation, the next assigned treatment Club on the list was contacted. If a control Club refused participation, the next assigned control Club was contacted. This procedure was repeated until four treatment Clubs and two control Clubs were selected within in each of the five regions (see Table A.1).

Clubs assigned to implement Triple Play were awarded implementation grants from BGCA. Control sites were given smaller research grants to defray research costs and a promise of becoming a funded implementation site in 2008 at the conclusion of the study.

Youth Sample

The population of youth from which the sample for the study was obtained consisted of all youth aged 9-14 attending the 30 Clubs in the study (20 treatment, 10 control) during March of 2006 for a total of 2,242 youth. Because of typically high mobility rates in and out of the Clubs (up to two-thirds of the youth stay less than two years) and seasonal attendance for sports and other activities, a stable sample of youth across 22 months is difficult to obtain. Because of these issues, the final sample was determined to be all youth who (1) participated in Club activities for the full time of the study, and (2) completed each of the three survey administrations. Because the study focused on change over time, the final sample for analysis consisted of the youth who were involved in the Clubs for the duration of the study. A total of 727 youth (32 percent of the total youth population between ages 9-14) completed surveys at all three time points throughout the study.

A total of 2,242 youth (1476 at Triple Play Clubs, 766 at control Clubs) completed the baseline survey across 30 Clubs which provides comparative data to see determine the representativeness of the final analysis sample.

At baseline, two-thirds of the youth were in the 9-11 year old age group. Most of the youth in the study are minority (68 percent), with the largest group of youth being African-American (36.5 percent).White youth make up approximately 31 percent of the sample, while Hispanic youth and other racial groups make up 11 percent and 21 percent of the sample respectively. Slightly more than half of the sample is male (52 percent).The vast majority of youth in the study report they are doing fairly well in school (Cs and higher, 86 percent).With respect to Club attendance, the majority of youth report they have attended their Club for a year or more (67 percent), with nearly 40 percent attending the same Club for three years or more. The youth also report they attend the Club frequently, with 84 percent of the youth reporting that they attend a few times a week or every day.

The differences in characteristics and outcomes were examined for the population of youth at the Clubs and the study's youth sample to assess representativeness. Table A.3 shows the mean values of the demographic characteristics and outcome variables for both groups. There are no statistically significant or meaningful differences in the two groups based on demographic measures or baseline outcome measures, therefore the analysis sample is a good representation of the larger population.

Table A.3: Characteristics of Youth Study Population and Sample

Characteristic	Population of Youth at Clubs (N = 2242)		Study Sample (N = 727)	
	Mean	SD	Mean	SD
Demographics				
Black	37%	0.48	38%	0.50
Hispanic	11%	0.31	10%	0.28
White/Caucasian	31%	0.46	32%	0.42
Other racial group	21%	0.41	20%	0.40
Male	52%	0.50	52%	0.50
Average age at start of study	10.82	1.46	10.77	1.47
Average grades at start of study (1 = Fs, 8 =As)	7.13	1.68	7.10	1.69
Club Background (at start of study)				
Length of time attending Club (in years)	3.94	1.42	4.19	1.38
Frequency of Club attendance (in days per week)	4.36	1.11	4.51	0.96
Healthy Eating Behavior				
Eating breakfast in past week	3.90	1.34	3.92	1.34
Number of healthy foods eaten each day	7.31	3.37	7.16	3.14
Physical Activity Levels				
Average number of physical activities per week	6.47	4.28	6.64	4.07
Mastery and Control				
Positive Sense of Mastery and Control	19%	0.39	19%	0.39
Negative Sense of Mastery and Control	39%	0.49	40%	0.49
Peer Relationships				
High-Quality Peer Relationships	19%	.32	18%	.28
Low-Quality Peer Relationships	42%	.33	41%	.32

Measures

Youth surveys used in the study were administered three times over 22 months. The baseline survey was administered in March 2006, a mid-point survey was administered in December 2006, and the final follow-up survey was administered in December 2007. The research team trained Club staff how to administer the survey (in paper-pencil form) by reading the questions to youth in a small group setting during the designated survey week. Six sets of outcome measures from the survey were used in the analysis to examine the impact of Triple Play.

Healthy Eating Behaviors

Two measures of healthy eating were assessed using the survey – the number of healthy foods eaten the previous day and the number of days in the last week youth reported eating breakfast.

Number of Healthy Foods and Number of Fruits and Vegetables

The number of healthy foods and the number of fruits and vegetables eaten the prior day was extracted from a food diary. Food records are commonly employed in nutritional research and tend to be more accurate than other methods of dietary assessment (Ambrosinia, Mackerrasa, de Klerka, & Muska 2003; Pollitt, Gersovitz, & Garguido, 1978; Weber, Lytle, & Gittlesohn, 2004), particularly when used with children and adolescents. Youth were given a list of food options (representing the food pyramid) and asked to indicate whether or not they had eaten foods in each category the day prior to the survey. Youth completed the diary for breakfast, lunch, dinner and snacks.

The two measures were created by summing across the number of healthy foods (7 possible) options checked for each meal. For example, to calculate the number of healthy foods eaten at breakfast, the number of checked fruits, juice, vegetables, low-fat milk products, whole grains and lean protein was summed. An overall sum was created across all meals. The reliability for the measure is quite high, .92 for internal consistency and .77 in retest reliability.

Eating Breakfast

A single item measured the number of times that youth ate breakfast in the last week. The response options included 0 (none) to 7 (every day). Test-retest reliability on this index ranged from .82 to .87, indicating good stability over time.

Nutritional Knowledge

We measured nutritional knowledge with a series of seven items that assessed knowledge about a variety of nutritional topics covered in the Healthy Habits curriculum. On the original survey, two questions were asked of the youth – however, prior to the mid-point survey, it was determined by BGCA that they wished to assess knowledge as an outcome. We developed an additional five items to add to the mid-point and final surveys. The items are used as individual measures because (1) they do not cover the entire domain of knowledge that might be covered,

and were not intended to be a complete knowledge assessment; and (2) the uneven number of items at baseline and follow-up make it difficult to scale a single knowledge measure that is equivalent for each time period. However, the retest reliabilities were adequate, ranging from .61 to .70.

Physical Activity

Three measures of physical activity were assessed using the survey: (1) the number of minutes that youth report being engaged in physical activity each day; (2) the percentage of youth who meet pre-specified physical activity standards; and (3) the average number of physical activities in which youth participate at the Club

Minutes of Physical Activity Per Day

Youth were asked to complete a physical activity log for the past week, where they were asked to report the number of minutes they spent in physical activity each day for the past week. An average of the number of minutes was created for each day, and then an average across days was computed. The resulting index represented the average number of minutes youth spent in physical activity per day for the last week. The index measuring the number of minutes spent in physical activity exhibited good reliability with internal consistent estimates ranging from .89 to .91, and retest reliability ranging from .76 to .77.

Standards for Daily Physical Activity

Four indices were computed from the average minutes of physical activity to assess the degree to which youth were achieving Triple Play physical activity goal standards. We computed two indices for high levels of activity – the number of days youth engaged in at least one hour of physical activity, and the percentage of youth that participated in one hour of physical activity at least five days a week. Two indices were also computed for low levels of physical activity – the number of days youth engaged in less than 30 minutes of physical activity, and the percentage of youth that engaged in less than 30 minutes of physical activity four or more days a week. Retest reliabilities were relatively high, ranging from .73 to .82.

Number of Physical Activities Engaged at Club

To calculate the number of physical activities that youth reported they were involved in at the Club, we summed across seventeen possible activity types (including jump rope, basketball, soccer, karate, home run challenges, jogging, walking, bicycling, tag, volleyball, swimming, aerobics, baseball/softball, football, dance, wrestling, and hockey. Responses were coded “1” if the youth reported participating in that activity at the Club, and “0” if they did not. A total of 17 activities could be coded. The index measuring the number of physical activities exhibited good reliability with internal consistent estimates ranging from .89 to .91, and retest reliability ranging from .78 to .80.

Developmental Outcomes

Two measures of youth developmental outcomes were assessed – sense of mastery and control and quality of peer relationships (consisting of items assessing peer communication, peer conflict, peer instrumental support, peer emotional support). The items for the two developmental outcomes were taken from existing surveys used across youth development contexts. Table A.2 shows the individual items associated with each scale.

Sense of Mastery and Control

Sense of mastery and control assesses both internal and external feelings of control over the environment (Petersen, Schulenberg, Abramowitz', Offer" & Jarcho, 1984).To calculate the final measure of mastery and control, two indices were created – one representing high levels of mastery and control, and one representing low levels of the mastery and control. Mean or average scores are first calculated across the 10 mastery and control items, and then criteria are applied to create the high and low thresholds. High thresholds represent the level of the developmental outcome that has been shown to predict good outcomes for youth, while the low threshold has been associated with negative outcomes for youth. The internal consistency estimates for the average mastery and control scale score was relatively high, (.80), and retest reliability across the three survey administrations ranged from .56 to .72.

Quality of Peer Relationships

Peer relationships were measured using items from a scale that assesses four dimensions of quality of peer interactions (Gambone, Klem, & Connell, 2002).The four dimensions included communication, conflict, instrumental support and emotional support with peers. To calculate the final measure of peer relationship quality, two indices were created – one representing high quality peer relationships, and one representing low quality peer relationships. Mean or average scores are first calculated across the 16 peer interaction items, and then criteria are applied to create the high and low quality thresholds (see Table A.4). The internal consistency estimates for the mean peer interaction scale score was relatively high, (.84), and retest reliability across the three survey administrations ranged from .65 to .74.

General Supports and Opportunities at the Club

Five measures of the general developmental quality of youth experiences at the Club were also assessed – supportive relationships, physical and emotional safety, opportunities for skill-building, meaningful youth involvement and community involvement. These five support and opportunity measures are an existing YDSI measure used across youth development contexts. Each of the support and opportunity measures was converted into two indices – one representing high levels of the measure and one representing low levels of the measure. Mean scales are first calculated across the items for each scale, and then criteria are applied to create the high and low thresholds. High thresholds represent the level of the support or opportunity that has been shown to predict good developmental outcomes for youth, while the low threshold has been associated

with negative developmental outcomes for youth. The internal consistency estimates for the mean scales was adequate to good, ranging from .65 to .82, and retest reliability ranged from .56 to .72.

Exposure to Triple Play Components

To assess the level of exposure to Triple Play for youth in the treatment group, we asked youth to indicate how often they participated in various Triple Play components, specifically, the Healthy Habits curriculum, Daily Challenges, Sports Teams/Clubs and the Gamesroom. In addition, youth were asked to indicate (1) whether or not they learned about healthy food choices at the Club; and (2) what types of snacks were provided to them at the Club. These measures were categorized into dichotomous variables for analysis. Youth reported that they did or did not learn about healthy eating choices at the Club – a "0" indicated they did not, and a "1" indicated they did learn about choosing healthy foods at the Club. For classifying the type of snacks provided to youth, the Club was designated as providing mainly healthy snacks if youth reported receiving healthy snacks at least two-thirds of the time (on average) across the study.

For exposure to Healthy Habits, Daily Challenges, Sports Clubs/Teams and the Gamesroom, youth were asked how often they participated in these activities at the Club. Responses ranged from 1 (Never) to 4 (Almost Always).Exposure to each component was estimated by taking the average across youths' responses to this question at the mid-survey and the ending survey. Youth who averaged 2 or less on this combined response were classified as having low exposure to a particular Triple Play component, and youth who averaged more than 2 were classified as having high exposure to a particular Triple Play component.

Categorization of Outcome Variables

For policy purposes, it is often useful to understand how interventions work for youth at different levels. For example, in educational accountability, focus is placed on moving students out of undesirable performance levels and into pre-determined proficiency levels (U.S. Congress, 2001).In youth development work, developmental outcomes often conceptualize how much of a particular outcome is needed (for example, sense of mastery and control or quality of peer relationships predicts a youth's longer term outcomes, such as economic self-sufficiency and mental health (Gambone, Klem and Connell, 2002)). The U.S. Department of Health and Human Services recommends specific levels of exercise (at least 60 minutes per day) that are deemed to be high for children and adolescents' development. Similar guidelines are provided for nutrition – such as eating a certain number of fruits and vegetables a day (USDA, 2005).

By categorizing youth into those who are high and low on an outcome at the beginning of the study, it is possible to identify whether or not a program may be more effective in remediating existing risk behaviors, or in preventing risk behaviors from occurring. As follow-up to the main impact analyses, the study also examines how Triple Play works for youth who start out high and

low on the five main outcomes – consumption of healthy foods, eating breakfast, physical exercise, mastery and control and quality of peer relationships. Cut-points for the outcome variables were based on established standards (when available) or on natural breaks in the distribution when external standards were not available. Table A.4 shows the categorization criteria for each outcome variable.

TABLE A.4: Categorization Cut-points for Low and High Outcome Levels

Outcome Variable	Low Category Threshold	High Category Threshold
Healthy Eating	Two or fewer healthy foods eaten in previous day	Six or more healthy foods eaten in previous day
Eating Breakfast	Eats breakfast two or fewer days per week	Eats breakfast five or more days per week
Physical Exercise	Inactive (less than 30 minutes exercise) four or more days per week	Engages in vigorous physical activity (at least 60 minutes) five or more days per week
Mastery and Control	More than two responses less than 2.00 in scale	Three or more responses of 3.00 or higher in scale
Quality of Peer Relationships	Average less than 2.00 on a 4.00 Likert scale	Average of 3.5 or higher on a 4.00 Likert scale

Data Analysis

The analysis of whether or not Triple Play has an impact on youths' outcomes was conducted using longitudinal data. We examined the average differences between baseline levels in these outcomes and outcomes at the end of the study for youth who participated in Triple Play compared to their control Club peers[12].Differences in these average changes from baseline to the end of the study can be interpreted as differences due to the presence of Triple Play, given that the Clubs were randomly assigned to receive or not receive the Triple Play program. For example, if the youth in Triple Play Clubs showed a 10 percent increase in nutritional knowledge

[12] *Analyses of overall impact included statistical controls for gender, ethnicity, length of time attending the Club, frequency of attendance and Club membership (through use of a random intercept that was allowed to vary across Clubs to take into account Club-level variation). These statistical controls allow us to get more precise estimates of the impact of Triple Play. In addition, the analytic model used an analysis of covariance approach to examine the average difference in final outcomes controlling for the initial baseline level of each outcome. Descriptive trends and changes are also reported for each analysis, including threshold and subgroup analyses, where the impact of Triple Play is estimated for different groups of youth.*

from baseline to the end of the study and the youth in the control Clubs showed a 2 percent increase in knowledge over the same period of time, the 8 percent difference in gain between the two groups can be interpreted as the impact of Triple Play on this measure. If that difference is found to be statistically significant and practically meaningful, we are confident that difference is not due to chance.

CRTs require specific analytic methods to analyze their nested structures and correlated errors across time. Because youth are nested within Clubs, they are more likely to be similar to their Club peers than to youth in other Clubs. This dependency among members of a Club can adversely affect the significance tests conducted by making it more likely to find false positives. Hierarchical linear modeling allows researchers to disentangle the multiple sources of variance that characterize much social scientific research. For example, the academic performance of a student can be examined as a function of individual level characteristics, classroom characteristics and school or community characteristics. Multi-level analyses allow researchers to examine the separate (and combined) contributions of these levels of analysis (Bryk & Raudenbush, 2002).

Given the hierarchical nesting inherent in the research design (i.e., youth nested within Clubs and also nested within time), the analytic models to assess the impact of Triple Play examined the change in youth outcomes (i.e., healthy eating, physical exercise, etc.) associated with participating in Triple Play by partitioning the variance for three different levels – youth, time and Club. This impact is defined as the difference between outcomes experienced in the presence of Triple Play and in the absence of Triple Play (the counterfactual or control group).In the randomized experimental designs, the impact of Triple Play on a youth outcome equals the difference between what the outcome was after the Triple Play intervention was underway and what it would have been without the intervention. In practice, one can measure this difference by comparing the change over time in a youth outcome for Clubs that implemented Triple Play with the corresponding change for similar programs that did not adopt it (control Clubs)[13]. For our purposes, this estimate (operationalized as the coefficient associated with the cross-level interaction between treatment (Triple Play or control) at the Club level and time (baseline and both follow-ups) at the youth level) provides an approximation of the relationship between Triple Play implementation and youth outcomes – or the impact of Triple Play. If this coefficient is sufficiently large, it indicates there is an impact as a result of participating in Triple Play.

The statistical models used in the analyses were three-level hierarchical linear models – where Level-1 estimated the slope of the outcome trend for each youth, independent of treatment or control status, Level-2 estimated the effect of youth characteristics (specifically, age, frequency and length of attendance at the Club, gender, and ethnicity) on the slope and intercepts in youth

[13] *See Bloom, Hill and Riccio (2003) for a description of this approach, which is referred to as "short interrupted time-series analysis."*

outcomes, and Level-3, the Club level, estimated the impact of the treatment on the average slope of the youth outcome for each Club using a binary indicator of 1 = Triple Play Club and 0 = control Club. The estimates of interest in these analyses are the coefficients associated with the Club level effect on the average youth slope. If this coefficient is statistically significant, and practically meaningful, there are differences in the rate of change for youth in Triple Play Clubs and those in control Clubs.

For subgroup analyses, the same multi-level, repeated measures models were estimated for males and females, white, African-American, and Hispanic youth, and for younger and older youth (12 and younger and 13 to 15 years old).For analyses examining the impact of Triple Play on youth who started out low or high on outcomes, similar models were conducted.

For more ease in interpretation, the results in the report are presented as adjusted mean scores or percentages at each of the three measurement points. Significance tests are reported on the effect of the treatment on the average youth outcome slope. In addition, effect sizes are presented in the form of standardized mean differences so that the reader can see how large particular effects are. Effect sizes are interpreted according to social science convention of small (d = .30), moderate (d = .50) and large (d = .80) (Cohen, 1998).

A second set of analyses examined if there was any bias in the findings. A method for doing this is to conduct the analyses for all youth who were in the baseline sample, not just the ones who stayed until the end of the study. These analyses, called intent-to-treat analyses, include an end-of-study outcome score for all youth, not just the ones who completed the last survey. This end-of-study outcome was estimated for study dropouts based on their baseline levels, as well as the average outcome for the youth who did not dropout. If the results of these analyses are not substantially different than the results for the youth who stayed in the study the whole time, we can rule out that our findings are biased because of youth dropping out of the study.

Internal Validity of Experimental Design

Internal validity refers to the ability of the research to make causal attributions that the differences in youth outcomes are a result of participating in a given program. To the degree that other plausible explanations can be ruled out, the impact estimates are more valid. Internal validity is influenced by a variety of factors, including selection bias, history and maturation effects, and regression to the mean.

Selection Bias

Experimental designs are especially susceptible to selection bias and CRTs are susceptible at two levels: at the group level (where randomization occurs) and at the individual member level. While randomization is the best method for distributing systematic differences across units, there still may be factors that make youth within certain Clubs more similar than in others or Clubs more similar to some Clubs than other Clubs.

To the degree that the youth attending different Clubs within the treatment and the control sites are not equivalent on key characteristics, the internal validity of the study is compromised. To examine the equivalence of the treatment and control group youth, comparisons were made between the two groups on key demographic characteristics, as well as on the outcomes of interest. According to Table A.5 on the previous page, which shows the demographic characteristics, as well as the baseline assessment of outcomes for both treatment and control groups, the youth in Triple Play and control Clubs were comparable across a broad range of demographic, behavioral and socio-emotional characteristics at baseline. There were no statistically significant differences between the two groups on any of the characteristics, or on baseline measures of the outcomes, indicating that the youth in Triple Play Clubs and control Clubs were equivalent on measured variables.

Sample (Club Level) Attrition

Any study that follows sample members over time will lose a certain proportion of participants by the end of the study. This potentially creates selection bias if the attrition is substantial and if it is not random. Attrition can be problematic in cluster-randomized trials at two levels – at the level of randomization or the Clubs in the case of the current study, and at the level of the individual Club members. Maintaining the original units of randomization or the Clubs is of primary importance. To the degree that Clubs drop out of the study, the benefits obtained through randomization are threatened. No treatment or control Clubs dropped out of the study, therefore, the initial distribution of Club characteristics remained intact throughout the study.

Based on these results, it appears that the Club-level analysis sample is substantially the same as the original sample in most ways, and that any selection bias is not significant. Therefore we have confidence that the results presented here accurately reflect the differences between youth at Triple Play Clubs and at other Clubs.

TABLE A.5: Baseline Equivalence of Treatment and Control Group Youth

	Total Sample		Control Group		Treatment Group		Treatment/ Control Difference	
	Mean	SD	Mean	SD	Mean	SD	Diff	Sig
Demographics								
Black	37%	0.48	39%	0.49	35%	0.48	4%	NS
Hispanic	11%	0.31	10%	0.36	12%	0.27	2%	NS
White/Caucasian	31%	0.46	30%	0.42	32%	0.48	2%	NS
Other racial group	21%	0.41	21%	0.41	21%	0.41	0%	NS
Male	52%	0.50	51%	0.50	52%	0.50	1%	NS
Average age at start of study	10.82	1.46	10.69	1.45	10.88	1.47	0.19	NS
Average grades at start of study (1 = Fs and 8 =As	7.13	1.68	7.10	1.61	7.14	1.71	0.04	NS
Club Background (at start of study)								
Length of time attending Club	3.94	1.42	3.77	1.43	4.02	1.41	0.25	NS
Frequency of Club attendance	4.36	1.11	4.44	1.04	4.32	1.14	0.12	NS
Healthy Eating Behavior								
Eating breakfast in past week	3.90	1.34	3.85	1.31	3.92	1.35	0.07	NS
Number of healthy foods eaten	7.31	3.37	7.27	3.09	7.33	3.51	0.06	NS
Short Term Physical Activity Levels								
Average minutes of physical activity per day	57.63	43.82	59.70	43.19	56.57	44.11	3.13	NS
Mastery and Control								
Positive Sense of Mastery and Control	19%	0.39	20%	0.40	18%	0.39	2%	NS
Negative Sense of Mastery and Control	39%	0.49	40%	0.49	39%	0.49	1%	NS
Peer Relationships								
High-Quality Peer Relationships	19%	0.37	19%	0.37	18%	0.37	1%	NS
Low-Quality Peer Relationships	41%	0.48	41%	0.46	42%	0.48	1%	NS

Individual Youth Attrition

When looking at attrition of individual youth within the Clubs, bias can occur if different types of youth drop out of different Clubs. The attrition rates in this study were substantial between the first and second round of the survey (attrition rate of 36 percent) and between the second and third round of the survey (additional attrition rate of 19 percent).Youth dropped out of the study for several reasons:

- As youth became older, they often stopped coming to the Club. Clubs tend to have more difficulty in retaining youth as they reach high school age.
- Program offerings varied from season to season at the Club, and therefore some of the youth who attended for a specific program might not be in attendance at the Club when the program was not being run.For example, some youth might only attend the Club during basketball season, or during soccer season.
- Youth moved out of the Club because of relocation (such as in the case of high mobility on military bases) or because Clubs closed or consolidated.

The youth level attrition rate, while quite high, is typical of the program attrition rate for youth programs in general, and of Boys & Girls Clubs in particular, which have attrition/mobility rates of 60 to 70 percent in some cases[14]. However, youth attrition is a concern for the study, because we may not be able to make an unbiased judgment of whether or how much Triple Play has an impact on the youth who stay in the program if there are differences between those who leave the program over time and those who stay.

One would expect there to be some differences among youth who dropped out and those who did not. One of the strengths of the randomization process is to distribute those differences evenly across the two groups of Clubs. However, it is still possible that the youth who left the study and those who stayed may differ for other reasons – (for example, some youth may feel a stronger sense of belonging at the Club than others, or Clubs may not serve a certain group of youth as well as others). Our concern is with any differences such as the ones listed that may be systematic in nature. These systematic differences, if they exist, may be related to important ways that the youth are not the same. If youth differ in important ways and only certain youth stay in the program, selection bias can occur – that is only certain groups of youth are part of the impact analysis (e.g., only Whites and Blacks, but no Hispanics or Native American youth). In this case, impact can only be interpreted for the groups included, and overall judgments of impact may be erroneous because not all youth in Clubs are included.

First, we examined whether or not youth who dropped out of the study were systematically different from those who did not drop out of the study. Table A.6 shows the mean values of the demographic characteristics and outcome variables for the initial sample (N=2,242), the youth

[14] *Personal communication with BGCA staff*

who dropped out of the study at Round 2 (N=808), the youth who dropped out of the study at Round 3 (N=437) and the remaining analysis sample (N = 729). An additional 268 youth who did not complete the Round 2 survey completed the Round 1 and Round 3 surveys (making the overall attrition rate somewhat lower), however, they were not included in the longitudinal analyses.

As seen in Table A.6 differences among the dropouts and non-dropouts are relatively minor. In terms of demographic characteristics, it appears that there is a slightly higher percentage of Caucasian youth who dropped out of the study (from 31 percent to 23 percent in the final sample) than other ethnic groups- yielding a somewhat high percentage of Black youth in the final sample (an increase of 37 percent to 48 percent). With respect to the study outcomes, youth who dropped out of the study were slightly less likely to have friends who encouraged them to participate in physical activity and were slightly more likely to report higher levels of peer conflict. All of these differences were statistically significant although quite small[15].

To further explore whether or not our attrition issues led to a biased sample, we examined whether or not different types of youth dropped out of the Triple Play Clubs compared to the youth who dropped out of the control group Clubs. Youth who left Triple Clubs could potentially have different reasons for leaving than youth who left control Clubs. For example, if the youth who leave Triple Play Clubs are less physically active or have more negative peer relationships than youth who leave control Clubs, we may not be able to accurately assess the impact of Triple Play on youth who may need it the most. To attribute changes in outcomes to involvement in Triple Play may be erroneous in this case, when the differences may actually be due to the level of physical activity or the peer relationships of the youth rather than whether or not they participated in Triple Play.

Table A.6 shows how dropouts for Triple Play Clubs and control Clubs compare to one another by comparing the initial group of Triple Play and control Club youth with those who dropped out of both groups. The comparison of interest is whether the Triple Play study dropouts are similar to control Club study dropouts. If they are similar, we can have more confidence than any impacts we find are related to Triple Play, rather than some characteristic of the youth themselves.

[15] *Effect sizes ranged from .02 to .07 (based on eta-squared)—defined as small by Cohen, 1998.Eta-squared represents the degree of relationship between a predictor and an outcome.In our case, a predictor would be dropout or non-dropout.If the eta-square is small, it indicates that there is not much relationship between dropping out and a particular outcome, such as peer conflict.*

TABLE A.6: Differential Youth-Level Attrition for Treatment and Control Groups

	Treatment Group Initial Sample		Treatment Group Atrittors		Control Group Initial Sample		Control Group Atrittors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Demographics								
Black (% of Youth)	0.35	0.48	0.22	0.41	0.39	0.49	0.45	0.50
Hispanic (% of Youth)	0.08	0.27	0.09	0.28	0.16	0.36	0.15	0.36
White/Caucasian (% of Youth)	0.36	0.48	0.48	0.50	0.23	0.42	0.17	0.38
Other racial group (% of Youth)	0.21	0.41	0.21	0.41	0.21	0.41	0.21	0.41
Male (% of Youth)	0.52	0.50	0.52	0.50	0.51	0.50	0.48	0.50
Average age at start of study	10.88	1.47	10.98	1.48	10.69	1.45	10.71	1.48
Average grades at start of study (1 = Fs and 8 =As	7.14	1.71	7.17	1.73	7.10	1.61	7.09	1.59
Club Background (at start of study)								
Length of time attending Club	4.02	1.41	3.85	1.44	3.77	1.43	3.65	1.42
Frequency of Club attendance	4.32	1.14	4.17	1.22	4.44	1.04	4.45	1.06
Healthy Eating Behavior								
Eating breakfast in past week	3.92	1.35	3.89	1.35	3.85	1.31	3.82	1.32
Number of healthy foods eaten	7.33	3.51	7.37	3.75	7.27	3.09	7.29	3.11
Short Term Physical Activity Levels								
Average minutes of physical activity per day	56.57	44.11	57.78	45.08	59.70	43.19	58.38	43.76
Self Efficacy								
Self-efficacy OP	0.18	0.39	0.18	0.39	0.20	0.40	0.20	0.40
Self-efficacy HR	0.39	0.49	0.37	0.48	0.40	0.49	0.41	0.49
Peer Relationships								
Peer emotional support OP	0.28	0.45	0.27	0.45	0.24	0.43	0.26	0.44
Peer emotional support HR	0.30	0.46	0.31	0.46	0.29	0.45	0.29	0.45

Shaded cells indicate significant differences among groups.

To test whether or not the Triple Play and control samples used in the analyses reported later in the report are similar, we compared how similar these two groups were at baseline, and how similar they were after taking into account study dropouts. According to Table A.6, the attrition rate for Triple Play and control Club youth was approximately the same. The only substantive difference between Triple Play and control Club study dropouts was with respect to race. More Black youth dropped out of the treatment group (13 percent decrease in the treatment group versus a 6 percent increase in the control group), and more Caucasian youth dropped out of the control group (increase of 15 percent in the treatment group and decrease of 5 percent in the control group). There were no practical differences in the effect of attrition for the two groups for any other demographic characteristic or for baseline levels of physical activity, healthy eating and a sense of mastery and control.

Taken together, our attrition analyses suggest that there are no substantive differences between the youth who dropped out and those who continued to participate in the study, nor between youth in the treatment and control groups who dropped out of the study. Based on these results, it appears that the analysis sample is substantially the same as the original sample in most ways, and that the degree of bias is not significant. Therefore we have confidence that the results presented here accurately reflect the differences between youth at Triple Play Clubs and at other Clubs.

APPENDIX B: STATISTICAL RESULTS

Table B.1: Impact of Triple Play on Youths' Healthy Eating Behavior

	Baseline		Mid-Study (10 months post baseline)		Final Follow-Up (22months post baseline)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Total Knowledge Percentage Correct[16]						
Triple Play Youth	NA	NA	34%	.26	45%	.31
Control Youth	NA	NA	36%	.22	38%	.23
Knowledge of Portion Size Percentage Correct[17]						
Triple Play Youth	NA	NA	34%	.20	42%	.33
Control Youth	NA	NA	35%	.22	34%	.31
Knowledge of Nutrients Percentage Correct[18]						
Triple Play Youth	NA	NA	35%	.25	42%	.33
Control Youth	NA	NA	35%	.26	40%	.33
Number of Healthy Foods Eaten in Previous Week[19]						
Triple Play Youth	7.34	1.10	6.70	1.08	7.00	1.05
Control Youth	7.14	1.10	6.37	1.22	5.74	1.71
Number of Healthy Fruits and Vegetables Eaten in Previous Week[20]						
Triple Play Youth	2.90	.71	2.73	.68	3.22	.75
Control Youth	2.89	.74	2.82	.69	2.34	.77
Number of Days Eating Breakfast[21]						
Triple Play Youth	3.92	1.36	3.81	1.30	3.19	1.34
Control Youth	3.79	1.38	3.62	1.25	2.70	1.37

Note: Triple Play N = 507; Control N = 219

[16] *Overall Impact: $F_{INT}(1, 720) = 25.69$, $p <= .001$, $\underline{d} = .72$; Triple Play trend: $F(1,500) = 21.26$, $p <= .001$, $\underline{d} = 1.36$; Control Club trend: $F(1,212) = 3.10$, $p <= .001$, $\underline{d} = .43$.*

[17] *Overall Impact: $F_{INT}(1, 720) = 12.68$, $p <= .001$, $\underline{d} = .62$; Triple Play trend: $F(1,500) = 28.64$, $p <= .001$, $\underline{d} = 1.14$; Control Club trend: $F(1,212) = .56$, $p <= .361$, $\underline{d} = -.13$.*

[18] *Overall Impact: $F_{INT}(1, 720) = 1.33$, $p <= .271$, $\underline{d} = .12$; Triple Play trend: $F(1,500) = 6.98$, $p <= .001$, $\underline{d} = .97$; Control Club trend: $F(1,212) = 6.87$, $p <= .001$, $\underline{d} = .75$.*

[19] *Overall Impact: $F_{INT}(2, 718) = 44.09$, $p <= .001$, $\underline{d} = .92$; Triple Play trend: $F(2,499) = 2.56$, $p = .078$, $\underline{d} = .32$; Control Club trend: $F(2,211) = 27.10$, $p <= .001$, $\underline{d} = -1.04$.*

[20] *Overall Impact: $F_{INT}(2, 718) = 54.29$, $p <= .001$, $\underline{d} = 1.22$; Triple Play trend: $F(2,499) = 5.68$, $p = .028$, $\underline{d} = .61$; Control Club trend: $F(2,211) = 17.56$, $p <= .001$, $\underline{d} = -1.21$.*

[21] *Overall Impact: $F_{INT}(2, 718) = 2.44$, $p = .088$, $\underline{d} = .27$; Triple Play trend: $F(2,499) = 5.97$, $p = .003$, $\underline{d} = -.55$; Control Club trend: $F(2,211) = 8.71$, $p <= .001$, $\underline{d} = -.82$*

Table B.2: Impact of Triple Play on Youths' Physical Activity Levels

	Baseline		Mid-Study (10 months post baseline)		Final Follow-Up (22 months post baseline)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Average Number of Minutes Spent in Exercise Per Day[22]						
Triple Play Youth	48.02	10.36	49.13	9.30	54.21	7.66
Control Youth	51.05	10.57	52.29	12.07	47.17	10.24
Average Number of Days Exercising More than 60 Minutes[23]						
Triple Play Youth	2.41	1.06	2.83	.96	3.24	.94
Control Youth	2.71	1.12	2.53	1.12	2.53	1.06
Average Number of Days Exercising Less Than 30 Minutes[24]						
Triple Play Youth	3.44	1.15	3.04	1.07	2.51	1.11
Control Youth	3.10	1.06	3.22	.81	3.12	.80

Note: Triple Play N = 507; Control N = 220

Table B.3: Impact of Triple Play on Quality of Youths' Peer Relationships

	Baseline		Mid-Study (10 months post baseline)		Final Follow-Up (22 months post baseline)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
High-Quality Peer Interactions[25]						
Triple Play Youth	24%	.28	28%	.30	31%	.29
Comparison Youth	24%	.27	28%	.28	20%	.29
Low-Quality Peer Interactions[26]						
Triple Play Youth	62%	.30	57%	.31	52%	.31
Comparison Youth	62%	.30	62%	.29	61%	.30

Note: Triple Play N = 507; Control N = 220

[22] *Overall Impact: $F_{INT}(2, 718) = 72.51$, $p <= .001$, $d = 1.04$; Triple Play trend: $F(2,499) = 15.58$, $p <= .001$, $d = .68$; Control Club trend: $F(2,211) = .29$, $p = .752$, $d = -.35$*

[23] *Overall Impact: $F_{INT}(2, 718) = 49.97$, $p <= .001$, $d = .99$; Triple Play trend: $F(2,499) = 7.37$, $p <= .001$, $d = .84$; Control Club trend: $F(2,499) = .38$, $p = .684$, $d = -.16$*

[24] *Overall Impact: $F_{INT}(2, 718) = 49.97$, $p <= .001$, $d = -.91$; Triple Play trend: $F(2,499) = 4.69$, $p = .010$, $d = -.84$; Control Club trend: $F(2,211) = 1.79$, $p = .169$, $d = -.02$*

[25] *Overall Impact: $F_{INT}(2, 718) = 4.92$, $p = .008$, $d = .46$*

[26] *Overall Impact: $F_{INT}(2, 718) = -3.24$, $p = .040$, $d = -.29$*

Table B.4: Impact of Triple Play on Youths' Sense of Mastery and Control

	Baseline		Mid-Study (10 months post baseline)		Final Follow-Up (22 months post baseline)	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
High Sense of Mastery and Control[27]						
Triple Play Youth	16%	.36	19%	.28	20%	.29
Comparison Youth	20%	.28	22%	.30	15%	.29
Low Sense of Mastery and Control[28]						
Triple Play Youth	40%	.30	39%	.29	35%	.30
Comparison Youth	42%	.30	35%	.31	38%	.31

Note :Triple Play N = 507; Control N = 220

Table B.5: Impact of Triple Play on Youths' Healthy Eating Behavior by Ethnic Group

	TP Change	Control Change	Raw Impact	Sig. Level	Effect Size (d)
Number of Healthy Foods Eaten in Previous Day					
African American	-.54	-1.24	+.70	**	.69
Hispanic	.76	1.32	-.56	NS	-.58
White	-.42	-2.39	+1.97	***	1.92
Number of Days Eating Breakfast in the Past Week					
Black	-.79	-.95	+.16	NS	.12
Hispanic	-.68	-1.53	+.85	**	.66
White	-.75	-1.08	+.33	NS	.25
Average Number of Minutes Exercising Per Day					
Black	6.86	-8.55	+15.41	***	1.67
Hispanic	.83	-9.10	+9.93	***	1.17
White	13.01	-3.15	+16.16	***	1.79

[27] *Overall Impact: $F_{INT}(2, 718) = 4.03$, $p = .018$, $\underline{d} = .21$*
[28] *Overall Impact: $F_{INT}(2, 718) = 1.36$, $p = .266$, $\underline{d} = .13$*

Table B.6: Impact of Triple Play on Youths' Healthy Eating Behavior and Physical Activity by Gender

	TP Change	Control Change	Raw Impact	Sig. Level	Effect Size (d)
Number of Healthy Foods Eaten in Previous Day					
Females	-.51	-1.61	+1.10	***	.98
Males	-.16	-1.21	+1.05	***	.92
Number of Days Eating Breakfast in the Past Week					
Females	-.74	-.94	+.20	NS	.15
Males	-.75	-1.24	+.51	NS	.38
Average Number of Minutes Exercising Per Day					
Females	6.65	-8.42	+15.07	***	1.59
Males	3.64	-1.91	+5.55	***	.58

Table B.7: Impact of Triple Play on Youths' Healthy Eating Behavior and Physical Activity by Age

	TP Change	Control Change	Raw Impact	Sig. Level	Effect Size (d)
Number of Healthy Foods Eaten in Previous Day					
9-12 Year Olds	-.32	-1.38	+1.06	***	.76
13-15 Year Olds	-.39	-1.5	+1.11	**	1.00
Number of Days Eating Breakfast in the Past Week					
9-12 Year Olds	-.84	-1.12	+.28	NS	.21
13-15 Year Olds	.73	-.29	1.02	*	.51
Number of Days Eating Breakfast in the Past Week					
9-12 Year Olds	4.84	-5.01	+9.85	***	1.03
13-15 Year Olds	14.35	2.69	+11.66	***	1.23