Guide to Implementing a Middle School Activity Program

Laura Elizabeth Balis

The University of Montana

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GUIDE TO IMPLEMENTING A
MIDDLE SCHOOL ACTIVITY PROGRAM

By
LAURA ELIZABETH BALIS
B.S., Central Michigan University, Mt. Pleasant, MI, 2006

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in Health and Human Performance

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Approved by:
Perry Brown, Associate Provost for Graduate Education
Graduate School

Arthur Miller, Chair
Health and Human Performance

Annie Sondag
Health and Human Performance

Marya Bruning
St. Patrick Hospital
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SECTION 1

INTRODUCTION
This completed guide is the professional paper for my Master’s Degree in Health and Human Performance from The University of Montana. The purpose of the guide is to describe the steps in designing, implementing, and evaluating a cardiovascular health program for middle school students, called CATCH Fridays, and to create a guide for others who wish to replicate the program at their school.

The program was created as a supplement to CATCH (Coordinated Approach to Child Health), a nationally-recognized program currently in place in Missoula, Montana. St. Patrick Hospital and the Missoula City-County Health Department support the CATCH program in Missoula. CATCH is a school-based, coordinated cardiovascular health program. The program objectives are to increase physical activity in children and decrease fat and sodium from their diets (Perry et al., 1990).

This is accomplished through five components: Eat Smart (school food service intervention), physical education lessons, classroom curricula, family involvement (Luepker et al., 1996), and CATCH Kids’ Club (after-school program). The complete CATCH program is currently available for kindergarten through fifth grade, and CATCH PE extends through eighth grade. The additional components are currently being piloted in Texas for middle school use (The University of Texas, 2008).
Chapter 1
Why Start an Activity Program?

Creating a cardiovascular health program for middle school students is important to help increase physical activity in students. This can lead to a decrease in cardiovascular disease, a nationwide health problem that can start in childhood.

The rationale for creating this program is that cardiovascular disease has become a major concern in the United States. As of 2005, it was the leading cause of death for Americans (Kung et al., 2008). The risk factors for cardiovascular disease include hypertension, hypercholesterolemia, obesity, and atherosclerosis. These risk factors are influenced by multiple factors, including genetics and behavior.

Inactivity is one of the behavioral risk factors for cardiovascular disease. Physical activity has been shown to decrease the risk factors for cardiovascular disease. It can decrease hypertension, lower cholesterol, and help control weight and prevent obesity. Engaging in even moderate intensity physical activity can be beneficial (United States Department of Health, 2000).

Children and adolescents should be targeted for cardiovascular disease prevention for several reasons. Hypertension, hypercholesterolemia, obesity, and development of atherosclerosis all occur in youth. During adolescence, habits are formed that influence physical activity routines throughout life. Establishing good health habits early in life can help prevent chronic health problems later in life (Franks et al., 2007). Additionally, there is a significant decrease in children’s physical activity from elementary school to middle school. This overall trend in decreasing physical activity also occurs during recess time (Gaskill et al., 2007).

Schools play an important role in improving adolescents’ health and are a good setting for health promotion programs such as cardiovascular health programs. The social norms that influence health behaviors are acquired in school (Franks et al., 2007). Physical activity programs that supplement the existing physical education classes can help students achieve the recommended amount of daily physical activity. Other organized activity programs, such as Sports4Kids, have been successful in increasing students’ activity levels (Sports4Kids.com).
SECTION 2
IMPLEMENTATIONS STEPS
There are several steps that should be taken when implementing a health promotion program. First, a needs assessment should be conducted to determine the needs of the community or organization and if a program does need to be implemented. After it has been determined that an activity program is needed, goals and objectives for the program should be decided.

Next, the design and format of the program can be determined. This includes selecting activities and recruiting volunteers. Finally, the program can be implemented, which includes determining program staff, acquiring equipment, and recruiting participants. The program will also need to be evaluated. Evaluation methods should be determined before the program starts and should be ongoing within the program.
Chapter 2
Conduct a Needs Assessment

A needs assessment is a way of asking community members what the most important needs of their organization are. It is an important first step to determine if an activity program is necessary. Needs assessments can be done several ways, including public forums, surveys, interviews, and observations (University of Kansas, 2007).

Prior to beginning the CATCH Fridays program, an informal needs assessment was conducted by the CATCH program staff. The principals of the three middle schools in the Missoula County Public School District (C.S. Porter, Meadow Hill, and Washington) were contacted. The principals were asked about their needs related to students’ cardiovascular health and how the CATCH program could assist them. In addition, a review of literature related to adolescents and inactivity was conducted and local research data was reviewed as part of the needs assessment.

The principal of CS Porter Middle School reported that an activity program taking place during lunch recess would be beneficial. During this unstructured time, the majority of the students socialized outside but did not engage in physical activity although some sports equipment was available. This 45-minute lunch and recess period would be a good way to fit physical activity into the students’ days.
Chapter 3  
Determine Goals and Objectives

The goal of CATCH Fridays is to increase time middle school students spend in moderate to vigorous physical activity. The objectives that help accomplish this goal are providing fun, age-appropriate activities and teaching new physical activity skills. These goals and objectives are designed to decrease the risk of cardiovascular disease in adolescents.
Chapter 4
Design the Program

The design and format of the program can now be determined. Guidelines for physical activity are available that can help ensure the program goals are met. CATCH Fridays was designed to follow the CATCH guidelines for physical activity. CATCH physical activities are intended to increase time spent doing moderate to vigorous activity (Perry et al., 1990) by providing fun and cooperative activities (Edmundson et al., 1996). Time spent waiting for a turn is minimized, and games in which students are eliminated and are then inactive are not used.

To follow these guidelines, games such as kickball were adapted so more students would be active at once. Activities are also designed to be non-competitive to increase participation from the greatest proportion of students (National Association for Sport and Physical Education, 2008). Following this program design can help meet the goal of increasing time students spend in moderate to vigorous activity.

Selection of Activities

Program activities can now be selected carefully for the target population. The physical activities for CATCH Fridays were designed with the interests of middle school students in mind. Activities were also selected by observing middle school students engaging in physical activity. It was observed that the activities chosen by the students included playing with Frisbees and playing football.

Popular activities offered in middle school after-school programs were also researched. Fairfax County Public Schools listed activities offered through the after-school programs at most of the 26 middle schools in their district. Physical activities offered at several schools included kickball, dance, running, and fitness (Emery, 2007).

The activities planned for CATCH Fridays include Ultimate Frisbee / Disc Golf, Crazy Kickball, Fitness Challenges, Winter Olympics, Quidditch, Snow Sculpting, Flag Football, Footbag, Hip-Hop Dance, 5k Training Program, and Jump Rope (Table 1).
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Activity (no snow)</th>
<th>Alternate Activity (in case of snow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-3-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
<td>n/a</td>
</tr>
<tr>
<td>2</td>
<td>10-10-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
<td>n/a</td>
</tr>
<tr>
<td>3</td>
<td>10-24-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
<td>n/a</td>
</tr>
<tr>
<td>4</td>
<td>10-31-08</td>
<td>Crazy Kickball</td>
<td>n/a</td>
</tr>
<tr>
<td>5</td>
<td>11-7-08</td>
<td>Crazy Kickball</td>
<td>n/a</td>
</tr>
<tr>
<td>6</td>
<td>11-21-08</td>
<td>Crazy Kickball</td>
<td>Crazy Kickball</td>
</tr>
<tr>
<td>7</td>
<td>12-5-08</td>
<td>Crazy Kickball</td>
<td>Crazy Kickball</td>
</tr>
<tr>
<td>8</td>
<td>12-12-08</td>
<td>Fitness Challenges</td>
<td>Winter Olympics</td>
</tr>
<tr>
<td>9</td>
<td>12-19-08</td>
<td>Fitness Challenges</td>
<td>Winter Olympics</td>
</tr>
<tr>
<td>10</td>
<td>1-9-09</td>
<td>Fitness Challenges</td>
<td>Winter Olympics</td>
</tr>
<tr>
<td>11</td>
<td>1-16-09</td>
<td>Quidditch</td>
<td>Snow Sculpting</td>
</tr>
<tr>
<td>12</td>
<td>1-23-09</td>
<td>Quidditch</td>
<td>Snow Sculpting</td>
</tr>
<tr>
<td>13</td>
<td>1-30-09</td>
<td>Quidditch</td>
<td>Snow Sculpting</td>
</tr>
<tr>
<td>14</td>
<td>2-6-09</td>
<td>Flag Football</td>
<td>Flag Football</td>
</tr>
<tr>
<td>15</td>
<td>2-13-09</td>
<td>Flag Football</td>
<td>Flag Football</td>
</tr>
<tr>
<td>16</td>
<td>2-20-09</td>
<td>Flag Football</td>
<td>Flag Football</td>
</tr>
<tr>
<td>17</td>
<td>2-27-09</td>
<td>CATCH Game</td>
<td>CATCH Game</td>
</tr>
<tr>
<td>18</td>
<td>3-6-09</td>
<td>HHP Students’ Activity</td>
<td>HHP Students’ Activity</td>
</tr>
<tr>
<td>19</td>
<td>3-20-09</td>
<td>HHP Students’ Activity</td>
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</tr>
<tr>
<td>20</td>
<td>3-27-09</td>
<td>Hip-Hop Dance</td>
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<tr>
<td>21</td>
<td>4-10-09</td>
<td>Hip-Hop Dance</td>
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</tr>
<tr>
<td>22</td>
<td>4-17-09</td>
<td>Hip-Hop Dance</td>
<td>n/a</td>
</tr>
<tr>
<td>23</td>
<td>4-24-09</td>
<td>5k Training</td>
<td>n/a</td>
</tr>
<tr>
<td>24</td>
<td>5-1-09</td>
<td>5k Training</td>
<td>n/a</td>
</tr>
<tr>
<td>25</td>
<td>5-15-09</td>
<td>Dodgeball</td>
<td>n/a</td>
</tr>
<tr>
<td>26</td>
<td>5-22-09</td>
<td>Super Skippers</td>
<td>n/a</td>
</tr>
<tr>
<td>27</td>
<td>5-29-09</td>
<td>Dodgeball</td>
<td>n/a</td>
</tr>
<tr>
<td>28</td>
<td>6-5-09</td>
<td>Dodgeball</td>
<td>n/a</td>
</tr>
</tbody>
</table>

In case of inclement weather, we will move to the gym and our activity will be Fitness Challenges lessons 1 and 2, which do not require any extra equipment.

**Program Format**

The dates, times, and location of the program can now be determined through communication with the principal. For CATCH Fridays, it was determined that the program would run every Friday that school is in session. This fit the schedule of the program staff and provided something for students to look forward to at the end of the week. The schedule includes a total of 28 Fridays throughout the school year. Each grade level (6th, 7th, and 8th) has about a 45 minute lunch and recess period. The students are outside during this before and
after they eat lunch, except in the case of extremely cold weather. Therefore, activities were selected that can be done outside with alternate activities for inclement weather.

The structured format of the activities is used to provide a comfortable environment for all students. It may also encourage participation by girls. In activity programs with unstructured formats, girls often do not feel comfortable and boys dominate the activities (Bauer, Yang, & Austin, 2004).

**Volunteer Recruitment**

Community groups were contacted to provide volunteers for special activities, including Ultimate Frisbee and hip-hop dance. The first step in recruiting volunteers is to research potential sources of volunteers in your community (University of Kansas, 2007). In Missoula, The University of Montana is an ideal source for volunteers. University students may want to volunteer to complete requirements for classes or to gain experience to boost their resumes.

The next step is to plan and implement the recruitment strategy. This includes determining target people or groups to volunteer, and then creating a strategy to recruit them (University of Kansas, 2007). For our program, target volunteers were determined through the activities planned that would most benefit from being lead by volunteers. For example, a volunteer was found to teach hip-hop dance to the students since this was an activity the program staff was not as familiar with. The Drama / Dance Department at the university was contacted to find the volunteer.

The final step is to find volunteers and then convince potential volunteers to become active (University of Kansas, 2007). To do this, potential volunteers were contacted and told about the program and how being a volunteer could be beneficial for them.

A health promotion program planning class at the university was also a source of volunteers. Students in this class needed to complete a project that consisted of developing a mini health promotion program. For their project, the students developed a lesson plan for a CATCH Fridays activity. The students also came to the middle school and helped facilitate their planned activity.
Chapter 5
Implement the Program

Determining Program Staff

Program staff should be determined and trained if needed. Staff for CATCH Fridays included the CATCH Dietitian, CATCH Coordinator, and CATCH Intern. All three staff were involved in developing the program. The CATCH Dietitian and Coordinator have received CATCH training, and all three program staff are experienced leading physical activity lessons. Therefore, no additional staff training was required.

Selecting Equipment

Equipment for the CATCH Fridays activities was a combination of preexisting CATCH program supplies and additional supplies purchased through the CATCH budget. This equipment included discs, hula hoops, pinnies, cones, bases, various balls, sleds, scarves, and jump ropes. Prizes were also purchased and given out each week to participating students. Prizes included disc golf discs, water bottles, jump ropes, sweatbands, headbands, and temporary tattoos. A portable radio was also used to play music during the activities.

Recruiting Participants

Recruiting participants for CATCH Fridays was done through a variety of methods. An article was written about the program and published in the school's monthly newsletter for parents (Figure 1). Fliers about the program were created and distributed around the school. One flier was designed for teachers to inform them about the program so they could encourage students to participate. Another flier, designed for students, listed activities and prizes (Figure 2). Announcements were also written about the program and read during the morning announcements on Fridays (Figure 3).
CATCH Fridays Coming Soon!

Starting October 3rd, CATCH (Coordinated Approach to Child Health) staff will be at the school every Friday to lead fun outdoor activities during the lunchtime free period. Planned activities include ultimate Frisbee, disc golf, kickball, and hip-hop dance lessons. During the winter, the fun will continue with Winter Olympics activities and snow sculpting.

Students who participate in CATCH are eligible for prizes given away throughout the year, including iTunes and Southgate Mall gift cards. Encourage your students to participate in CATCH Fridays and be active!

The CATCH Program is brought to you by St. Patrick Hospital and the Missoula City-County Health Department. For more information, contact Laura Balis at lbalis@saintpatrick.org or 327-3012.

CATCH Fridays Helps Students Get Moving at Lunch!

The CATCH Fridays program kicked off on October 3rd. CATCH (Coordinated Approach to Child Health) staff are now at the school every Friday to lead fun outdoor activities during the lunchtime free period. CATCH Fridays offers a series of structured activities for the students, including ultimate Frisbee, kickball, hip hop dancing, and flag football, plus just-for-fun equipment like hula hoops, jump ropes, and a stereo. Students who participate in physical activities are rewarded on the spot with prizes.

In the first two weeks of the program, we've seen encouraging changes on the playground. A majority of students are now playing Frisbee, jumping rope, hula-hooping, or gathering around the stereo to dance. Stay tuned for progress reports throughout the year. Encourage your students to participate in CATCH Fridays and be active!
During November and December, CATCH Fridays brought several new games to the playground. Students played Crazy Kickball, a fast-paced version of the old favorite. They also competed against CATCH staff in fun Fitness Challenges. And after the snow fell, students participated in sled races! In addition to these activities, we continued to offer jump ropes and hula hoops, which are always popular.

Stay tuned for progress reports throughout the year. Upcoming activities include flag football, footbag, and hip-hop dance. We’re continuing to give out prizes, including water bottles, headbands, and temporary tattoos, to active students. Encourage your students to participate in CATCH Fridays and be active!
**CATCH (Coordinated Approach to Child Health) is coming to C.S. Porter!**

Starting October 3rd, CATCH staff will be at the school every Friday to lead fun outdoor activities during the lunchtime free period. Students who participate in physical activity will be rewarded on the spot with prizes. Come participate in CATCH Fridays and be active!

---

**Activity Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-3-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
</tr>
<tr>
<td>10-10-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
</tr>
<tr>
<td>10-24-08</td>
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<td>10-31-08</td>
<td>Ultimate Frisbee / Disc Golf</td>
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<tr>
<td>11-7-08</td>
<td>Crazy Kickball</td>
</tr>
<tr>
<td>11-21-08</td>
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<td>12-5-08</td>
<td>Crazy Kickball</td>
</tr>
<tr>
<td>12-12-08</td>
<td>Fitness Challenges / Winter Olympics</td>
</tr>
<tr>
<td>12-19-08</td>
<td>Fitness Challenges / Winter Olympics</td>
</tr>
</tbody>
</table>

---

**Prizes:**

- iTunes gift cards
- Water bottles
- Sweatbands
- Footballs
- Jump ropes
- Mall gift cards
- Headbands
- Footbags
- Shoelaces
- Lip gloss
- Journals
- Folf disks
- Hair ties
- Stickers
- Temporary tattoos

---

*Catch* (Coordinated Approach to Child Health) is coming to C.S. Porter! Starting October 3rd, CATCH staff will be at the school every Friday to lead fun outdoor activities during the lunchtime free period. Students who participate in physical activity will be rewarded on the spot with prizes. Come participate in CATCH Fridays and be active!
The CATCH Fridays program is starting October 3rd. During your lunchtime free period, come check out activities like ultimate Frisbee, disc golf, and kickball. Students who participate can win prizes like iTunes gift cards!

CATCH Fridays will be here today! Come join us to play flag football and win fun prizes.
There are two types of evaluation that can be used to evaluate health promotion programs: process evaluation and impact evaluation. Process evaluation analyzes the program’s quality, how the program was run, and whether the target group was reached. This includes determining if participants are satisfied with the program and if activities are being implemented as planned. Impact evaluation measures the short term effects of the program, including changes in behavior, health knowledge, or risk factors (Hawe, Degeling, & Hall, 1990). Evaluation should be built into the program from the beginning and should reflect the program’s goals and objectives.

Additionally, program evaluation can be done through quantitative or qualitative methods. Quantitative methods systematically measure changes through number and statistics. This could be done through a survey. Qualitative methods use words to describe people’s experiences and feelings regarding programs. This can be done through an interview or focus group (Hawe, Degeling, & Hall, 1990).

Several methods of evaluating CATCH Fridays were considered and attempted. The original plan was to use both process evaluation and impact evaluation. This evaluation aligned with the original goals and objectives, which were:

- to increase time middle school students spend in moderate to vigorous physical activity. The goal can be met by accomplishing three objectives: improving attitudes about physical activity, providing fun, age-appropriate activities, and involving 50 percent of students per grade level (approximately 75 students per grade level).

Process evaluation was used to determine how effectively information was provided. This included providing fun, age-appropriate activities, and involving 50% of students (approximately 75) per grade level. To evaluate the activities, students were asked to fill out a short survey approximately every three week after the session to rate the activity provided, determine if a skill was learned or improved, and provide information on what additional activities they would like to participate in (Figure 4).
To count the number of students involved in the program, a raffle ticket was given to each participant. A winning raffle ticket was then selected for each grade level and the winners were announced on the following Monday. The winners could then report to the school office to claim their prizes. This was also the first strategy used to distribute prizes.

Impact evaluation was to be used to assess the amount of time the students spent in moderate to vigorous physical activity and their attitudes about physical activity. To measure the amount of time spent in moderate to vigorous physical activity, the International Physical Activity Questionnaire, Short Version (IPAQ) was to be used. The IPAQ is an instrument that can be used to obtain comparable measures of physical activity. It has been shown to produce repeatable data for monitoring population levels of physical activity (Craig et al., 2003). This questionnaire was to be administered in homeroom during the first two weeks of the program and again at the end of the program. The short version of the questionnaire was selected to take up less time during homeroom.
To assess physical activity attitudes, a modified version of the Health Behavior Questionnaire was to be used. The Health Behavior Questionnaire measures behavior and psychosocial variables on intentions to participate in physical activity. It was developed and piloted during the first phase of CATCH to measure psychosocial constructs related to diet, physical activity, and smoking behaviors (Edmundson et al., 1996). This questionnaire was also to be administered in homeroom during the first two weeks of the program and again at the end of the program.
SECTION 3

RECOMMENDATIONS
Chapter 7
Results and Recommendations

Evaluation

There were several problems with our original process evaluation strategy, which we attempted the first week of the program. Some students were uninterested in getting a raffle ticket and winning a prize. Other students were very interested in winning prizes and attempted to get more than one raffle ticket by returning to the table several times and asking for a ticket. With over 100 students participating at times, it was difficult to determine which students had already received a ticket. Because of this, the program coordinators were forced to remain near the table to “police” the handout of the raffle tickets rather than engage in the activity with the students. The coordinators attempted to have the students line up to receive tickets at the end of their free period, but there was not enough time after the bell rang and the students crowded around with some attempting to claim more than one ticket.

Therefore, using the raffle tickets resulted in an inaccurate count of students and a distraction for program coordinators. Using a sign-in sheet was also discussed, but was decided against due to the likelihood of problems similar to those with the raffle ticket method. It was decided that due to the large number of students, short period of time, and drop-in nature of the program, it was acceptable not to get an exact count of participants.

The problem with the planned impact evaluation was that we did not ask the principal ahead of time if we could conduct the questionnaires. When we contacted her the week before the program was to begin, she said there was not enough time in the homeroom classes to administer the questionnaires. Our recommendation is that evaluation procedures should be determined well in advance and should be presented to the principal as an essential component.

“CATCH Fridays is the only day recess is fun.”
-7th grade boy
of the program. This would have provided a chance for alternate arrangements to be made if it was truly not possible to conduct the assessments during homeroom.

Eventually we chose to use only a qualitative process evaluation. During the activities, we would occasionally interview students. We asked them if they liked the activity and if they learned anything new. We recorded their answers with a digital voice recorder and later transcribed them. This evaluation aligns with our program objectives of providing fun, age-appropriate activities and teaching new physical activity skills, which can help reach our goal of increasing time middle school students spend in moderate to vigorous physical activity.

**Prizes**

We tried several different methods of distributing prizes. The first method we attempted was through the raffle ticket system previously described. We next tried randomly handing out prizes to participating students. This worked well at first, but eventually we found that the same students were asking for prizes every week. Also, handing out the prizes detracted from our time engaging in the activity with the students.

The final method we used for handing out prizes was a scavenger hunt. We directed the students to find a sign located somewhere on the fence surrounding the field. This sign had a physical activity fact and directed the students to find another sign. The next sign had a multiple choice physical activity question and directed the students back to the CATCH Fridays activity area (Figure 5). If they answered the question correctly, they added their name to a numbered list posted on a clipboard on the fence. Numbers were drawn out of a box and prizes were handed out to students whose names were next to those numbers.

This method worked well because it encouraged additional physical activity in order to win a prize. We placed the signs far across the field so students would have to walk or run to them. The students also learned about physical activity through answering the question. Additionally, this approach required minimal time from the program coordinators.

“I like going and finding the questions and trying to get a prize.”
- 7th grade girl
Do you want to win a prize?

Start by finding the green sign

Fun Fact: GO ACTIVITIES make your heart beat faster, make you breathe harder, and make you sweat.

Go to the blue sign
CATCH Fridays

Which of the following is not a GO ACTIVITY?

a. Ultimate Frisbee  
b. Channel surfing  
c. Dancing  
d. Jumping rope

Go back to the CATCH activity area with the correct answer for a chance to win a prize!

Activities

Most of the activities were popular with the 6th and 7th graders but not with the 8th graders. Some of our most popular activities were flag football, Dragon’s Tail (a CATCH Game), and speedball (combination of soccer and football), the Health and Human Performance students’ activity. It was also helpful to provide an alternate activity such as jump ropes to involve more students.

We found that it was necessary to be flexible with planned activities due to the unpredictable weather. For example, for three weeks in January we had planned on doing Quidditch if there was no snow on the ground and snow sculpting if there was. However, the school’s field was icy and slippery, so we decided to play basketball on the shoveled basketball courts instead. It was helpful to have lots of different ideas for activities.

Sustainability

Overall, we felt that this was a successful program and should be continued. It will complement the other components of the CATCH program after they are implemented. Ideally,
Ever since CATCH has been here, it’s brought everyone together. Popularity doesn’t matter anymore. Everyone can join in, even people who are usually alone. And the games are good; they help keep your heart healthy so you don’t get diseases.”

-7th grade girl

in the future the CATCH Fridays program would be run by CS Porter staff with minimal assistance from the CATCH staff. This could be done by having the recess monitors trained in CATCH physical activity guidelines and given activity plans. There were one or two monitors on the playground during recess who watched the students’ behavior and enforced rules. In the future, if there were always two monitors present, one could lead a CATCH activity while the other could monitor for behavior. This training could be done by CATCH staff before the beginning of each school year.

Volunteer involvement with the program should be continued. Volunteers could be coordinated by the school’s CATCH champion with assistance from the CATCH staff. The CATCH champion is the leader of the CATCH committee at each school and is responsible for coordinating the CATCH components within the school. This person could continue to bring in volunteers from the community for various activities.
APPENDICES
Ultimate Frisbee / Disc Golf
Activity Plan

Lesson One – One-Step Throw and Catch
Adapted from CATCH Red Box #432

Purpose
1. Engage in moderate-to-vigorous physical activity
2. Learn and practice general throwing, catching, and game skills

Equipment
1. One disc per pair of students

Fitness / Skills
Throwing, catching

Organization
1. Students are in pairs along two parallel lines, 10 to 15 feet apart.

Description
1. First teach the technique of throwing both back hand and forehand (see CATCH Red Box #430).
2. Teach the different catching techniques: alligator catch, thumbs-down catch, and thumbs-up catch (see CATCH Red Box #430).
3. Let the students throw back and forth using a designated throw and a designated catch.
4. The students take a giant step backward after each successful catch and step forward when there is a miss.

Teaching Suggestion
1. Change the specified throw and catch frequently.
2. Change partners often.

Variations
1. Challenge students to see how many catches they can make in one minute.
2. Challenge students to throw at different levels. ("How close to the ground can you catch the discs?")

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Ultimate Frisbee / Disc Golf
Activity Plan

Lesson Two – Disc Golf
Adapted from CATCH Red Box #439

Purpose
1. Engage in moderate-to-vigorous physical activity
2. Practice throwing and game skills

Equipment
1. One disc per student
2. 18 to 20 hoops

Fitness / Skills
Throwing for accuracy

Organization
1. Space 18 to 20 “holes” (hoops) around a large activity area. Use natural obstacles such as trees and shrubs to create the course.
2. Three to five students start at each hole and move as a group around the course.
3. Stagger the starting positions so that every group will have an empty hole in front of them.

Description
1. On signal, students throw to the next hole. They keep track of their own number of “strokes” they take to land the disc inside the hoop.
2. Students wait for their entire group to complete a hole before throwing to the next one.
3. Students do not pass other groups.
4. When all the groups have returned to their starting hole, the game is over.

Teaching Suggestion
1. Space the holes closer together to make the activity easier; farther apart to make it more difficult.
2. Stress safety. Impose a two stroke penalty for hitting another “golfer”.

Variations
1. Start students in groups of three to five, but allow individuals to move around the course at their own pace.
2. Designate specific locomotor movements for students to use while moving to different holes.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Ultimate Frisbee / Disc Golf
Activity Plan

Lessons Three and Four – Ultimate Frisbee
Adapted from CATCH Red Box #444

Purpose
1. Engage in moderate-to-vigorous physical activity
2. Practice throwing and catching skills and teamwork

Equipment
1. Three discs
2. Eight cones
3. Pinnies for half of the students

Fitness / Skills
Throwing, catching, running, teamwork

Organization
1. Form six teams (five-six students each).
2. Divide the field into thirds (three small fields).
3. Play three games simultaneously, with one disc per team.
4. One team on each field should wear pinnies.

Description
1. The object for a team is to advance the disc downfield and score a point by passing to a teammate standing over (beyond) the end line.
2. The game begins with one team starting to pass at center line.
3. Game rules:
   a. If the disc is dripped or intercepted, the other team gains possessions and begins passing from that location immediately.
   b. A defender may go no closer than three feet to guard the person with the disc.
   c. Only three running steps with the disc are allowed.
   d. Passes must travel at least five feet.
   e. Players cannot score by running over the end line with the disc.
   f. After scoring, the player places the disc near the center of the end line, and his/her team takes possession and throws-off from there.

Teaching Suggestion
1. Demonstrate appropriate guarding before beginning play.
2. With beginners, permit guarding only in the defensive half of the field.
3. Use the following cues to enhance offensive play: “Spread out”; “Run to open field”; “Look for the open person”; “Play your designated position”.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Crazy Kickball
Activity Plan

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. Large rubber ball
2. Four base

Fitness / Skills
Throwing, catching, kicking, running

Organization
1. The bases are set up in a square field with equal sides of 60 feet (the same as a softball field).
2. The pitching mound is aligned with first base and third base.

Description
Crazy kickball is similar to kickball except for these rules:
1. The kicker can run either towards 1st base or 3rd base, depending on where they kicked the ball.
2. Once the kicker gets on base, s/he can stay or go after the next kick.
3. More than one student can be on base.
4. Since students will be running in both directions, there are no force outs.
5. If a pop fly is kicked, runners can advance to the next base if they want.
6. Runners can keep running unless there is an out or the ball is returned to the pitcher. Then the runners must go to the closest base.
7. If one run is scored, the next student in line to kick has to run out to 1st or 3rd base without kicking the ball. If four students score, then the next four students in line have to run out to 1st or 3rd base.

Additional kickball rules:
1. “One base on an overthrow” rule – if a ball is thrown but not caught, runners may only advance one base.
2. No “bouncies” – pitched balls must bounce at least two times before reaching the kicking area.
3. Kicks must be made at or behind home plate.

Teaching Suggestion
1. It isn’t necessary to keep score – it can be difficult with so much going on.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Fitness Challenges
Activity Plan

Lesson One – Partner Challenges
Adapted from CATCH Red Box #280-290 and Yellow Box #130

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. None

Organization
1. Each student needs a partner

Activity 1 - Get Up!
Fitness / Skills
Balance, muscular strength

Organization
1. Partners sit on the ground back to back with knees bent, feet flat on the floor, and elbows linked.

Description
1. Have partners stand up using only their legs. Remind students they may not get on their knees and hoist their partner up.

Variation
1. Once they can do this, have them combine with another pair.

Activity 2 - Partner Long Jump
Fitness / Skills
Power

Organization
1. Partners line up behind starting line.

Description
1. First partner will do a standing long jump from starting line.
2. Other partner will go to the spot where first partner jumped and start a long jump from there.
3. Count how many jumps it takes for the team to reach a specific goal.

Teaching Suggestions
1. Stress proper jumping technique.
Variation
1. Add more people to the group (three to four).

Activity 3 – Foot Tag
**Fitness / Skills**
Coordination, working with partners

Organization
1. Pairs scatter in a designated activity area.

Description
1. Partners hold hands.
2. Each partner tries to tag his/her partner’s foot using his/her own feet.
3. Stop play after a minute and compare number of tags per partner.

Teaching Suggestions
1. Hands must always be held.
2. Tap feet, do not stomp.
3. Keep your feet moving.
4. Students can try to beat their own scores.

Variation
1. Play in groups of three.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Fitness Challenges
Activity Plan

Lesson Two – Partner Challenges
Adapted from CATCH Red Box #293-294

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. None

Organization
1. Each student needs a partner.

Activity 1 – Knee Tapping
Fitness / Skills
Cardiovascular efficiency

Organization
1. Partners face one another about an arm’s-distance apart.

Description
1. Each partner tries to tap their partner’s knee with their hand, but avoid being tapped.
2. After a student taps their partner’s knee, they win that round. The best two out of three rounds wins the game.
3. Switch partners after each game.

Activity 2 - Partner Pull-Up
Fitness / Skills
Balance, muscular strength

Organization
1. Partners face each other.

Description
1. Partners squat facing each other in a bent-knee position, heels on the floor, and toes touching. They must pull together so that they come to a standing position at the same time. One partner may NOT stand up and pull the other partner up.
2. Change partners after each pair successfully stands up.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Fitness Challenges
Activity Plan

Lesson Three
Adapted from CATCH Red Box #288

Purpose
1. Engage in moderate-to-vigorous physical activity

Activity 1 - Ball Push
Equipment
1. One soft ball for every student

Fitness / Skills
Balance, muscular strength

Organization
1. Partners face one another holding a ball with both hands at chest level.

Description
1. Each partner pushes with his/her ball while hopping on one foot. The match is over when one partner is “knocked” off balance (both feet come in contact with the ground).

Activity 2 – Relay Race
Equipment
1. Cones

Fitness / Skills
Cardiovascular efficiency

Organization
1. Divide students into two teams.
2. Determine a starting line that students must start behind.
3. Set up two cones approximately 30 - 50 yards away from the starting line.

Description
1. Begin the relay with one student from each team running to their teams’ cone and back.
2. The student must return to the starting line before the next team member takes off.
3. The race ends when all students from each team have run to the cone and back.

Variation
1. Vary the distance from the starting line to the cones.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Winter Olympics
Activity Plan

Lesson One – Dog Sled Race

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. 8-10 sleds
2. Cones

Fitness / Skills
Teamwork, cardiovascular efficiency

Organization
1. Arrange the students in groups of 5-6.
2. Determine a starting line.
3. Set up cones approximately 30-50 yards away from the starting line.

Description
1. One student (the “driver”) sits in the sled.
2. The other students (the “dogs”) hold on to the rope attached to the sled.
3. Begin the race with each team pulling their driver to the cones and back.
4. Repeat the race with a different student as driver. Each student should get a turn to be the driver.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Winter Olympics
Activity Plan

Lesson Two – Snow Pile

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. None

Fitness / Skills
Teamwork, cardiovascular efficiency

Organization
1. Arrange the students in groups of 5-6

Description
1. Each team has 15 minutes to attempt to build the highest snow pile.
2. Teams must stop building after 15 minutes and determine which snow pile is the tallest.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Lesson Three – Snow Tug of War

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. One rope

Fitness / Skills
Teamwork, muscular strength

Description
1. All students help build a wall of snow at least chest high.
2. Divide the students into two equal teams with teams on opposite ends of the rope.
3. On “go,” students should start pulling.
4. One team wins when the other team crashes through the snow wall.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Quidditch
Activity Plan
Adapted from the *Harry Potter* book series

**Purpose**
1. Engage in moderate-to-vigorous physical activity

**Equipment**
1. Foam soccer ball (*quaffle*)
2. Four to eight foam / gator skin balls (*bludgers*)
3. Bouncy ball (*snitch*)
4. Six hula hoops (goals)
5. Pinnies for members of one team to wear

**Fitness / Skills**
Cardiovascular efficiency, throwing, catching, chasing, fleeing

**Organization**
1. Setup three hula hoops at each end. They should hang about six feet off the ground from a soccer net crossbar, tree branch, or basketball hoop / backboard.
2. Students are divided into teams and assigned positions. There are normally seven players on each team, but additional players can be added. The positions are:
   a. *Chaser*: three or more per team. Chasers are offensive players similar to forwards in soccer. They try to throw the quaffle through one of the hoops to score 10 points for their team.
   b. *Beater*: two or more per team. Beaters are defensive players, like soccer defenders. They use the bludgers to tag out chasers and the seeker.
   c. *Seeker*: one or two per team. When the snitch is released, they try to get it to score 150 points for their team.
   d. *Keeper*: one per team. They guard the hoops and try to block attempts to score.

**Description**
1. The game begins with a chaser from each team standing in the center with the other teammates positioned around them, like a basketball game tip-off.
2. The quaffle is tossed into the air by the referee (teacher) and the center chasers try to tip the ball to another chaser on their own team. Seekers and beaters don’t touch the quaffle.
3. Once the quaffle is caught by a chaser, s/he runs with it toward the three hula hoop goals. If s/he throws the quaffle through one of the opposing team’s hoops, s/he earns 10 points for the team.
4. When a goal is scored, players return to the center for a new tip-off.
5. Beaters are playing defense by attempting to stop the chasers from advancing or scoring by throwing the soft foam bludgers at them. Once tagged with the bludgers, the chaser must stop moving and try to pass the quaffle to another chaser. Once the quaffle is passed, the tagged chaser may move again. If the quaffle is dropped or intercepted by the opposing team, that team takes possession.
6. At some point in the game, the referee will release the snitch. As the only players who can touch the snitch, this is where the seekers come into play. Just like in the books and
movie, the snitch needs to move as much as possible, which is why a super-bouncy ball is needed.

7. Beaters can try to stop the seekers by tagging them with a bludgers. If a seeker is tagged, s/he must change positions with a teammate.

8. If the snitch stops rolling or bouncing without being picked up, it goes back to the referee to be released again later in the game.

9. The first seeker to catch the snitch scores 150 points for his team, the game immediately ends, and the points are added to determine a winner. Usually, but not always, it’s the team that earned an extra 150 points by catching the snitch.

Variations

1. The first seeker to get the snitch gets 20 points for his/her team. The game continues until one team gets 150 points.

2. Use one boy and one girl from each team to be the seeker. When the referee releases the snitch, s/he will call “boy!” or “girl!” This means that only the boy or girl seeker may go after the snitch.

3. Allow chasers to take only five steps with the quaffle. After five steps they must pass the ball to a teammate.

Closure

★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Snow Sculpting
Activity Plan

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. None

Fitness / Skills
Teamwork, muscular strength

Organization
1. Arrange the students into groups of 5 or 6.

Description
1. Ask the students to make a snow sculpture. The more creative, the better.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Flag Football
Activity Plan

Purpose
1. Engage in moderate-to-vigorous physical activity.

Equipment
1. Four cones
2. One football
3. One scarf per player
4. Pinnies for half the players

Fitness / Skills
Throwing, catching, fleeing, dodging, defending

Organization
1. Students are in teams of 5 or 6 players.
2. The two teams oppose each other in the activity area.
3. At the start of each game and at each kickoff, teams spread out on their own goal line.

Description
1. The game starts by a player on the “kickoff” team punting the ball into the receiving team’s area.
2. The receiving team tries to advance the ball down the field to the far goal.
3. Players may pass the ball to a teammate or run with it.
4. Defenders try to pull the ball carrier’s scarf before s/he crosses the goal.
5. Players crossing the goal without losing their scarf score one point for their team.
6. If the ball carrier fumbles, steps out of bounds, or loses his/her scarf, the play is dead. The teams then set up at their goal lines and the receiving team kicks off.
7. After a goal is scored, the scoring teams kick off.

Teaching Suggestions
1. Use pinnies to distinguish teams.
2. Rotate positions so all have the opportunity to throw, catch, and run.
3. Flags should be tucked in the middle of the waist in back to prevent flag guarding.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Hip-Hop Dance
Activity Plan

**Purpose**
1. Introduce students to an aerobic activity.

**Equipment**
1. None

**Fitness / Skills**
Cardiovascular efficiency, muscular strength and endurance, coordination, flexibility, rhythm/timing, balance

**Organization**
1. You will need an open room with space for the students to dance.

**Description**
1. The instructor will lead the students through a warm-up.
2. The instructor will teach hip-hop dance skills.
3. The instructor will lead the students through a cool-down.

**Closure**
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that dancing is a GO activity that helps keep our hearts healthy.)
Lesson One – Pass the Scarf
Adapted from CATCH Red Box #73

Purpose
1. Engage in moderate-to-vigorous physical activity
2. Increase cardiovascular endurance

Equipment
1. Six to ten scarves (bean bags or small balls will also work)
2. Six cones forming a 1/8 mile course

Fitness / Skills
Cardiovascular efficiency

Organization
1. Form lines with four to five students per line. Each line needs one scarf to pass.
2. Stagger the lines around the marked course.

Description
1. Each line begins jogging with the last student in line holding the scarf. On the start signal, this student sprints to the front.
2. The scarf is then passed back down the line until it reaches the last person. This person then sprints to the front and the process continues.
3. Challenge students to set a goal as to how long they can jog or how many laps they can complete with dropping the scarf.

Teaching Suggestion
1. When students begin to jog and pass, emphasize that the lead runner must jog slowly to keep the line together.
2. Encourage groups who tire of jogging to walk briskly until they can jog again.

Variations
1. Change the locomotor movement to skipping, hopping, etc.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
5k Training
Activity Plan

Lesson Two –
Nine Minute Run / Walk Challenge
Adapted from CATCH Red Box #333

Purpose
1. Engage in moderate-to-vigorous physical activity
2. Increase cardiovascular endurance

Equipment
1. Six cones forming a 1/8 mile course
2. Popsicle sticks
3. Whistle

Fitness / Skills
Cardiovascular efficiency

Organization
1. Begin the activity by blowing a whistle.
2. After nine minutes, blow a whistle for students to stop.

Description
1. Students run / walk as far as they can during the nine minute time period.
2. Hand out a popsicle stick to students for each lap they complete.
3. Students count their popsicle sticks at the end of the activity to determine how far they ran / walked.

Teaching Suggestion
1. Encourage students to pace, not race, and to try to run the same speed for each lap during the nine minutes.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
Dodgeball
Activity Plan

Purpose
1. Engage in moderate-to-vigorous physical activity

Equipment
1. 16-20 medium sized balls
2. Cones

Fitness / Skills
Cardiovascular efficiency, throwing, catching

Organization

<table>
<thead>
<tr>
<th>Team 2’s prison</th>
<th>Team 1</th>
<th>Team 2</th>
<th>Team 1’s prison</th>
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<tbody>
<tr>
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<td>Team 1</td>
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<td>Team 2</td>
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</table>

1. Use the cones to set up a rectangular playing area with additional cones used to create a center line. There should also be a “prison” area behind each team’s side.
2. Place the balls along the center line.
3. Divide the students into two teams. Each team should line up at the back line of their side of the playing area.

Description
1. On the start signal, students run to the center line to try to pick up the balls.
2. Students try to throw the balls at students on the other team.
3. If a student is hit with a ball, he/she must go to the prison.
4. Students may not hit other students above the shoulders. If this happens, the student who threw the ball must go to prison.
5. If a student catches a ball, the student who threw it must go to the prison.
6. Students can escape from prison if they catch a ball thrown by a teammate over the other team’s area and into the prison. They may then return to their own teams’ side.
7. The game ends when one team’s players are all in prison.

Closure
★ Is anyone sweating? Is anyone out of breath or breathing hard? (Reinforce that this was a GO activity that helps keep our hearts healthy.)
APPENDIX B
RATIONALE FOR THE PROGRAM

Cardiovascular Disease and Inactivity

Cardiovascular disease has become a major concern in the United States. As of 2005, it was the leading cause of death both worldwide (Mayo Clinic, 2007) and for Americans (Kung et al., 2008). The physiological risk factors for cardiovascular disease include hypertension, hypercholesterolemia, obesity, and atherosclerosis.

Cardiovascular disease is defined as a class of diseases involving the heart or blood vessels. These include myocardial infarctions (heart attacks), congestive heart failure, hypertension (high blood pressure), stroke, atherosclerosis, coronary artery disease (Mayo Clinic, 2007), coronary heart disease, and peripheral vascular disease (CDC, 1999.)

Hypertension refers to excessive force of blood pumping through the blood vessels. It is considered a form of cardiovascular disease as well as a risk factor for cardiovascular disease. Complications of hypertension include aortic aneurisms and dissections and hemorrhagic stroke (through blocked and ruptured blood vessels in the brain). Hypertension can also lead to congestive heart failure through left ventricular hypertrophy, which can lead to left ventricular dysfunction. Atherosclerotic complications of hypertension include coronary heart disease, ischemic stroke, and peripheral vascular disease (Mayo Clinic, 2007; CDC 1999).

Hypercholesterolemia (high cholesterol) is the accumulation of fatty deposits in the blood vessels. These deposits can lead to coronary artery disease, which is a decreased blood flow through the coronary arteries (Kirchner, 1998). This can then cause heart attacks by decreasing blood flow and oxygen to the heart. High cholesterol can also cause strokes through reduced blood flow to the brain (Mayo Clinic, 2007).

Obesity is defined as a body mass index (BMI) of 30 kg/m² or greater. BMI is a National Institutes of Health-recognized method of identifying overweight and obesity (National Institutes of Health, 1998). It is simple to calculate using only height and weight measures. It is calculated as weight in kilograms divided by the square of height in meters (or as weight in pounds divided by the square of height in inches, multiplied by 703). Although BMI has some limitations, it has been found to be significantly correlated to total body fat content for most individuals. Limitations include overestimation of body fat in those who are very muscular, such
as athletes, and underestimation in those who have decreased muscle mass, such as the elderly (United States Office of the Surgeon General, 2001).

The risks of obesity, as defined by BMI, include hypertension, stroke, coronary artery disease, and heart attacks (Hurd, 2007). Obesity can lead to hypertension due to the increased demand for oxygen to the body’s excess fatty tissue. The increased demand causes an increase in the amount of blood circulating through the body and an increase in pressure on the arterial walls. Hypertension can also be caused by obesity through an increased heart rate and a decreased blood vessel capacity. Obesity can also cause strokes through atherosclerosis and can lead to coronary artery disease and heart attacks through increased cholesterol (Mayo Clinic, 2007). Studies have shown that obesity, as defined by BMI, is related to an increased mortality through an increased risk of cardiovascular disease (United States Office of the Surgeon General, 2001).

Atherosclerosis refers to hardening of the arteries through the buildup of fatty plaques on the artery walls. Like hypertension, it is considered a form of cardiovascular disease as well as a risk factor for cardiovascular disease. Atherosclerosis can be caused by hypertension, high cholesterol, irritants such as nicotine, and diabetes. The inner wall of the artery becomes damaged by these irritants and platelets clump at the injury site to repair the artery. The fatty deposits, which are made of cholesterol and cellular waste products, accumulate at the injury site and harden (Mayo Clinic, 2007).

Atherosclerosis can lead to coronary artery disease by decreasing blood flow through the coronary arteries. This can then lead to heart attacks, congestive heart failure, and strokes by restricting blood flow to organs and tissues (Mayo Clinic, 2007).

These physiological risk factors are influenced by both genetics and behavioral factors (Vanderpool & Richmond, 1990), including an unhealthy diet (high in saturated fats), inactivity, and smoking (Mayo Clinic, 2007). However, according to the American Heart Association (2008), most cardiovascular disease is preventable and the majority of causes of cardiovascular disease are modifiable (Pearson et al., 2002).

Inactivity is a behavioral factor that contributes significantly to the development of cardiovascular disease (United States Department of Health, 2000). Inactivity can lead to hypertension, obesity (Perry et al., 1990), and high cholesterol (Mayo Clinic, 2007).

There are many ways in which regular physical activity can decrease the risk of cardiovascular disease through decreasing the physiological risk factors. Regular physical activity
can improve blood pressure and cholesterol levels (Perry et al., 1990) and help control weight (Child Trends, 2003). Hundreds of studies have examined the relationship between physical activity and health factors (Blair, Cooper, & Jaret, 2001), with the majority of research in physical activity and health focusing on some aspect of cardiovascular disease (CDC, 1999).

In the Surgeon General’s Report on Physical Activity and Health, researchers from the Centers for Disease Control and Prevention reviewed several studies relating physical activity level to the risk of hypertension. They found that those who are inactive are more likely to develop hypertension. This association occurs in both men and women. Regular physical activity, even at a moderate level, can help reduce the risk of hypertension (CDC, 1999).

Several studies have examined the relationship between physical activity and cholesterol levels. About half of these 60 studies found that physical activity is associated with an increase in high-density lipoprotein (HDL), the “good” cholesterol. HDL transports excess cholesterol to the liver for elimination (CDC, 1999), while low-density lipoprotein (LDL) transports cholesterol through the vascular system where it can build up in the walls of the arteries, leading to atherosclerosis (Mayo Clinic, 2007). Moderate intensity physical activity has been found to increase HDL and improve lower LDL levels as much as vigorous intensity physical activity (Duncan, Gordon, & Scott, 1991).

Obesity has many causes, including genetic, metabolic, cultural, socioeconomic, behavioral, and environmental factors. However, behavioral and environmental factors are the greatest contributors. For most individuals, obesity is a result of excess caloric consumption and/or inactivity. Inactivity, which can result in energy imbalance and weight gain, is a direct cause of obesity (United States Office of the Surgeon General, 2001).

Physical activity has a positive effect on reducing the risk factors for cardiovascular disease. Therefore, engaging in physical activity can decrease the risk of developing cardiovascular disease (United States Department of Health, 2000). Studies have shown that even moderate levels of physical activity can greatly improve health and help prevent cardiovascular disease (CDC, 1999). Participation by adolescents in physical activity can also help control weight (Child Trends, 2003).

**Targeting Adolescents**

Creating programs that target adolescents is important for several reasons. One reason is that the problem of inactivity often begins during childhood. Physical activity levels in children
have been found to decline from elementary school to middle school. Another reason to target adolescents is that the habits formed in middle school can influence physical activity levels throughout life. Establishing health habits early in life can help prevent chronic health problems later in life (Franks et al., 2007). Additionally, the risk factors for cardiovascular disease have been found to occur by adolescence. Therefore, it is important to encourage physical activity during middle school.

There is a significant decrease in children’s physical activity from elementary school to middle school. In the Missoula area, 78% of elementary school students meet the Centers for Disease Control and Prevention recommendation (CDC, 2008) of engaging in at least 60 minutes of *moderate to vigorous* intensity physical activity on most days. This number drops to 54% of middle school students (Gaskill et al., 2007). Nationwide, this number decreases to 34% by high school (Eaton et al., 2008). Additionally, 27% of elementary school students engage in at least 20 minutes of *vigorous* intensity physical activity three days per week, while only 12% of middle school students accomplish this (Gaskill et al., 2007).

This trend in decreasing physical activity also occurs during recess time. Elementary school students engage in eight minutes of moderate to vigorous intensity physical activity per 30 minutes of recess, while middle school students engage in only four minutes (Gaskill et al., 2007). Girls in particular become less active as they grow older and become more interested in sedentary social activities (Sallis, 1993).

During adolescence, habits are formed that influence physical activity throughout life. The middle school years are an especially important developmental period because adolescents are seeking independence and autonomy. They begin developing behavior patterns that are modeled after peers and social norms rather than determined by parents (Bauer, Yang, & Austin, 2004).

**Risk Factors and Adolescents**

Research shows that the risk factors for cardiovascular disease - hypertension, high cholesterol, obesity, and atherosclerosis - are evident even in youth. The presence of these risk factors during childhood and adolescence often continues into adulthood and can then lead to cardiovascular disease.

Research shows that the development of hypertension can begin early in life (Perry et al., 1990). The presence of hypertension during childhood is a predictor of hypertension later in
life. Also, hypertension occurs with increased frequency in overweight youth (United States Office of the Surgeon General, 2001).

According to the American Heart Association, there is sound research that the process of cholesterol buildup in arteries begins in childhood (American Heart Association, 2008). High cholesterol has been found to occur in youth, with increased frequency in overweight youth (United States Office of the Surgeon General, 2001).

Childhood obesity has increased dramatically among children and adolescents over the past 30 years. Obesity rates have tripled in children aged 6-11 and doubled in adolescents aged 12-19 (Institute of Medicine, 2005). As of 2007, 15.8 percent are now considered overweight and 13 percent are considered obese (Eaton et al., 2008). These prevalences are expected to increase over the next few years (Wang & Lobstein, 2006). Not only is the prevalence of overweight and obesity increasing, the rate of new cases identified each year is also rising (Lobstein, Baur, & Uauy, 2004). Obesity during childhood is directly related to a higher risk of obesity into adulthood.

Studies have found that atherosclerotic streaks and plaques can occur even by childhood (Perry et al., 1990). One study followed 14,000 individuals from birth to age 38. Autopsy data was collected on participants who died from various causes, mostly trauma. Of the data collected so far, 50 percent of individuals from two to 15 years old had fatty streaks in their aortas, and eight percent of them had raised plaques in the coronary vessels (Kirchner, 1998). This evidence indicates that atherosclerosis is a health problem that should be addressed in childhood.

Therefore, it is reasonable to target adolescents with prevention efforts for hypertension, high cholesterol, obesity, and atherosclerosis, which can all lead to cardiovascular disease. This can be done by increasing time spent in moderate to vigorous physical activity, which is the goal of the middle school activity program.

**Using School Setting**

Schools play an important role in improving adolescents’ health. Trained school staffs, access to most adolescents, and environments that support healthy behavior make schools a good setting for health promotion programs (United States Department of Health, 2000). The physical and social environments of the school are important influences on adolescents’ physical activity patterns (Bauer, Yang, & Austin, 2004). Students are in school for a large portion of their
day five days a week for most of the year. In addition, social norms that influence health behaviors are acquired in school (Franks et al., 2007).

The National Association for Sport and Physical Education (2008) recommends that schools use physical activity opportunities throughout the school day to help students meet the CDC recommended minimum of 60 minutes of moderate to vigorous physical activity per day. This is intended to supplement the time spent in physical education class and is an important component of schools’ physical activity programs. Participating in physical activity during the day can give students a break from sedentary activities and may enhance academic performance (National Association for Sport and Physical Education, 2008).

Besides CATCH, other school-based physical activity programs have been successful in increasing physical activity. Sports4Kids, a program that provides play skills and organized recess activities and to low-income schools, has been successful increasing the number of active students and decreasing the number of students sitting or standing on the playground (Sports4Kids.com).

Theoretical Framework

The format and methods used in CATCH Fridays, including giving out prizes and teaching skills, were based on the social cognitive theory. The social cognitive theory states that behavior is influenced by a combination of environmental influences, personal factors, and self-regulated behavior. These three factors interact dynamically to determine behavior (Simons-Morton, Greene, & Gottlieb, 1984). In addition, they are the modifiable factors that can be addressed in health intervention programs (Perry et al., 1990).

The CATCH program is based on the social cognitive theory, and research has found that the theory has been successfully applied to CATCH and other school health promotion programs (Edmundson et al., 1996). The environmental component of health promotion programs makes the intervention more effective because the programs create supportive conditions for healthy behavior choices (Bauer, Yang, & Austin, 2004). The CATCH Fridays program attempts to change behavior by influencing both environmental and personal factors.

Environmental influences include observational learning and reinforcement or inhibition of behavior through consequences (Simons-Morton, Greene, & Gottlieb, 1984). In CATCH Fridays, environmental influences are addressed through observational learning by watching program staff and other students engage in physical activity. The environmental component is
also addressed through reinforcement of participation in physical activity. This is accomplished through providing a fun, positive, encouraging environment, and handing out prizes to participating students.

Personal factors include outcome expectations, outcome expectancies, and self-efficacy. Outcome expectations are the anticipated results from a given action, while outcome expectancies are values attached to certain outcomes. Self-efficacy refers to perception of ability. It is highly predictive of behavior by itself (Bandura, 2004) and influences other factors of the social cognitive theory (Edmundson et al., 1996). In CATCH Fridays, self-efficacy is addressed through skill training and modeling. Lesson plans were created for each activity which include the teaching of new skills, and CATCH staff and volunteers provide modeling of the new skills.
APPENDIX C

REFERENCES


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