Implementation of an Evidence-Based Physical Activity and Nutrition Program in an After School Setting

Tylar A. Williams
University of Louisville, tylar.merritt1@gmail.com

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IMPLEMENTATION OF AN EVIDENCE-BASED PHYSICAL ACTIVITY AND NUTRITION PROGRAM IN AN AFTER SCHOOL SETTING

by

Tylar A. Williams (Merritt)

Paper submitted in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice

University of Louisville
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Date Finalized

8.13.19

Signature DNP Project Chair

Date

8.13.19

Signature DNP Project Committee Member

Date

8.13.19

Signature Program Director

Date

8.13.19

Signature Associate Dean for Academic Affairs

Date
Acknowledgments

I would like to thank Dr. Sara Robertson who has been my advisor and project chair throughout the program. Thank you for your guidance and support throughout this project and throughout the DNP program. I would also like to thank Dr. Mary DeLetter for being supportive and helping each of us understand the necessary essentials to be successful within our own personal DNP projects and within the program.

I would like to also thank all of the UofL College of Nursing professors and staff for all of their hard work throughout the program and for all of their help with simulations, coordination of head to toe assessments, and online management.
Dedication

I would like to dedicate my project to my loving father who passed away in 2015. He always praised me for being a nurse and always wanted me to follow my dreams and keep pushing even when times became challenging. I would also like to thank my husband who loved and supported me throughout these years and believed and stood by me through each and every exam, assessment, and papers.
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Abstract

Childhood obesity rates are continuously rising despite efforts to curb the trend. Sedentary behaviors and lower socioeconomic communities have been linked to the overall increase in childhood obesity rates. Additionally, poor understanding of childhood obesity and its adverse effects, has been shown to contribute to the increase in sedentary behaviors of children. The purpose of this study was to evaluate the feasibility of an after school, childhood obesity program and its effects on physical activity and nutrition behaviors and knowledge base. The childhood obesity program that was used was the 5-2-1-0 Lets Go out of school program. The intervention was evaluated by the Physical Activity Questionnaire for older children (PAQ-C) and the Get Fit with Grizzlies student questionnaire (GFWG) prior to the intervention, post intervention, and at six week follow up. Results of the two behavior and knowledge based scales showed positive results and an improvement in physical activity and nutrition behaviors. The PAQ-C yielded positive results for overall mean activity scores with pre-test scores increasing from 2.2 to 3.4 (out of 5) on the post-test after the intervention. Targeting children in settings where they can focus on these topics and fully understand the significance, can help further increase healthy behaviors in both of these categories.

Keywords: Childhood obesity, After school, physical activity, healthy eating
Improving physical activity and nutrition knowledge among children in an after school setting

Since the 1970s, the percentage of children that are overweight or obese has more than tripled and now, according to the Centers for Disease Control and Prevention, at least 1 in 5 children are obese or struggling with obesity (CDC, 2019). Additionally, the prevalence of obesity among children between the ages of 6-11, is an alarming 18.4% (CDC, 2019). This number increases as children progress through adolescence. The causes of obesity are multifactorial including genetics, behaviors, lack of knowledge and environment which makes obesity difficult to prevent and treat. Children who are obese and overweight have a higher risk for developing many chronic diseases such as: diabetes, hypertension and other risk factors for cardiovascular disease such as peripheral vascular disease (PVD) (CDC, 2019). Additionally, children that struggle with being overweight or obese are at a greater risk of being bullied which can result in depression, anxiety, and low self-esteem (CDC, 2017) Based on these alarming facts and statistics, identifying appropriate ways to help further prevent childhood obesity and helping children understand the significance of this epidemic, is essential.

Background

According to the CDC (2017), the causes of childhood obesity are multifactorial including genetics, behaviors, lack of knowledge, and environment (see Appendix A). Behaviors and the lack of awareness can be altered through education. Coleman, Geller, Rosenkranz, and Dzewaltowski (2008), highlight four major behaviors examined that play a significant role in the development of childhood obesity. These four behaviors include: lack of physical activity, lack of fruit and vegetable consumption, sugar sweetened beverage consumption, and use of television and video game viewing time.
Further studies have examined locations where a child spends majority of their time comparing children who go home versus those who attend an after school program. According to the After-School Alliance (2015), over 10 million children were enrolled in after school programs between the years of 2014-2015. Coleman et. al., (2008), explained that structured after school programs can give children healthy food and drink choices decreasing the consumption of sweetened beverages and other unhealthy foods. Also, structured activities can increase movement and decrease television viewing times.

Other recommendations in the literature suggest that using a multicomponent approach including education regarding physical activity and nutrition counseling, are essential in preventing obesity in children and can help children understand the essentials of each of these two topics (Ho et. al., 2015). Additionally, providing the appropriate education regarding physical activity and nutrition can help change children’s behaviors earlier in life (Nabors, 2018).

**Significance of problem**

In Kentucky, rates of obesity continue to rise despite constant efforts to reverse the trend. Figure 1 displays childhood obesity rates (ages 10-17) in the state of Kentucky with a comparison to the surrounding states. Kentucky ranks third in childhood obesity when ranked by state (State of Obesity, 2018). These rankings become significant when considering the adverse effects of obesity. According to the CDC, children who are currently obese are at risk for being obese throughout adolescence and adulthood which places more stress on the body overtime (CDC 2019). By decreasing the rates during childhood, children will be able to decrease the likelihood of developing HTN, diabetes, and other cardiovascular risk factors (CDC, 2019).
Theoretical Framework

Bandura’s Social Learning Theory and Social Cognitive Theory was utilized to form the framework for this project. Bandura identified that people primarily learn through behaviors, attitudes, and the outcomes of those personal behaviors (Bandura, 1971). Figure 2 displays the three main components of the Social Cognitive Theory and how each component has an effect on the other. Additionally, Bandura explained that behaviors that people display can come from observation and observing the actions of others. When examining childhood obesity and comparing it to this theory, children often learn behaviors from the people in their households or daycares/schools. If parents/guardians display unhealthy behaviors, their children will have linked exposure to these particular behaviors. Children can also learn such behaviors.
through social media and/or watching television. Food advertisements often display unhealthy foods, deals on foods, or new foods and drinks that make children more interested in poor quality foods and easily attracted towards them. Additionally, introducing the idea of exercise and the importance of exercise is important to introduce to children earlier in their life. If children are not introduced to different sports or activities that can help prevent obesity, they may not understand the significance in doing so (Schuller, 2011). When examining the Social Learning Theory and how it is applicable to childhood obesity, demonstrating appropriate behaviors, can help children realize the importance of eating healthy and exercising. Modeling, an essential part of the Social Learning Theory, can help with prevention efforts within childhood obesity. Children especially, model after their friends, family and environment due to their cognitive levels (Bandura, 1971).

Obesity prevention programs that consider the current environment, including social media and television, better reflect a child’s understanding of the topic. When examining obesity prevention programs in relation to behaviors and attitudes of children, it is important to assess how children feel about nutrition and physical activity in order to help them understand the significance. Examining the outcomes of these personal behaviors, such as eating healthy and exercising, and introducing this to children, can help them to further understand the importance of this topic and gain a better insight of obesity.
The Neighborhood House in Louisville, KY was the site for the project. The Neighborhood House is a community based organization which provides opportunities for families and children of all ages to obtain the skills necessary to live healthy and successful lives. In particular, this community center serves families and children in the Portland neighborhood and surrounding high-risk areas. The Neighborhood House provides programs for pre-school aged children that prepare them for kindergarten and also helps older youth with knowledge development and college readiness. The Neighborhood house also involves parents and/or guardians by helping them with parenting norms and partnering with local schools to encourage parental involvement. The mission is to provide individuals of all ages, better opportunities in life that will overall help them enhance their quality of life and knowledge.

Stakeholders involved in the Neighborhood House include: The director of programs at the Neighborhood house, the educational assistant director of youth, and staff volunteers. Stakeholder buy in was present for this program as it aligned with the goal of the organization.
Specifically, children should be able to learn and understand life qualities and traits that are necessary in order to be healthy and successful. As with any after school program, consistent attendance was perceived to be a common barrier.

**Purpose**

The purpose of this project was to evaluate the feasibility of a physical activity and nutrition program for children that were enrolled in the after school program at the Neighborhood House. The specific aim was to explore how this program effected physical activity and healthy eating behaviors as well as the knowledge base of children who were in the after school program.

**Intervention**

The 5-2-1-0 Let’s Go program can be administered by one or two program leaders depending on the number of children enrolled. In this case, a single program leader worked with five children. Staff that were present at the Neighborhood House during the time of the intervention, made sure the needed supplies were available and that each student was aware of the program dates. Permission to administer the program was obtained from the Neighborhood House (see Appendix B). The program leader met with the participants as a group one to times a week for six weeks for one hour sessions with each section focusing on a specific educational goal (see Appendix C). The education program that was utilized for this project was the 5-2-1-0 Let’s Go out of school tool kit that was designed for child learners in after school programs. Let’s Go is a nationally known, evidenced based childhood obesity prevention program that has successful implementations in schools, after school settings, and many communities worldwide. The goal of the 5-2-1-0 program is to promote education and awareness regarding healthy eating and physical opportunities. The program strives to introduce obesity prevention strategies to
many different settings in order to decrease overweight and obesity rates in children. The program’s ultimate goal is to increase awareness and behaviors of children in order to help prevent obesity throughout adolescence and adulthood. A budget was created to establish the program needs and identify items that were essential for the program (see Appendix D).

The program included a 28 question pre-test that was made of simple multiple choice and fill-in answer questions. The students were identified by their first name only throughout the program. The program concluded with a post-test that included the same questions as the pre-test. Six weeks later after the program end date, the same post-test was administered to the participants that were included in the program. This study was approved by the University of Louisville Institutional Review Board.

**Instruments**

The Get Fit with Grizzles Student Questionnaire (GFWG) is an 18 item scale that was developed by Dr. Carol Irwin, PhD. This scale was created to evaluate the effectiveness of the Get fit with Grizzlies, community based program that was implemented in a school based setting to fourth and fifth grades. The Youth Risk Behavior Surveillance System (YRBSS) was used as a model to create this questionnaire. In order to achieve content and face validity, the questionnaire was previously examined by a panel of experts that consisted of three veteran elementary physical education teachers, a university elementary specialist, a university level statistician, a registered dietitian, and an exercise physiology professor. The questions contain eight nominal questions which assess overall knowledge and 10 ordinal questions which assess eating and physical activity behaviors. This scale was selected because it assesses both knowledge and behaviors of children in relation to nutrition, physical activity, and screen time. Each item of the
scale assesses whether or not the participant answers the questions correctly or met the current guidelines/recommendations regarding nutrition and physical activity.

The Physical Activity Questionnaire for older children (PAQ-C) is a 10 item ordinal scale that was developed to assess behavior and activity patterns of each child over the last couple of days. An example of a question is: “In the last 7 days, what did you do most of the time at recess.” The answer options include: 1- Sat down (talking, reading, doing schoolwork), 2-Stood around or walked around, 3- Ran or played a little bit, 4- Ran around and played quite a bit, or 5- Ran and played hard most of the time. An overall score of one is indicative of low levels of physical activity and a score of five is indicative of high levels of physical activity. Demographic data of each participant was also collected and this data included age and gender.

Participants

Participants were children enrolled in the Neighborhood House after school program. Recruitment for this program included a program flyer that was provided to Neighborhood House parents/guardians and children (see Appendix E). The program was also promoted by the Neighborhood House staff and the staff made announcements each week both via email and verbally to the children and the parents/guardians. Inclusion criteria were children between the ages of 9-12 who attend the after school program at the Neighborhood House. This age group was primarily of interest due to the cognitive level of children in that they were old enough to understand the information that was presented. Exclusion criteria included children with mental or physical disabilities that made it impossible for them to participate. Participation was optional; however, at any time, the child could stop participation in the program.
Data Collection

Data was collected at three points in the program via a paper and pencil assessment. The pre-test was obtained prior to the start of the program and included participant demographics and fill in the blank knowledge and behavior questions. The post-test was administered on the last day of the program and was identical to the pre-test except for the exclusion of the demographics. A follow up assessment was administered six weeks later and was identical to the post-test. The surveys were kept in a locked cabinet in Dr. Sara Robertson’s office in room 4031 K-wing, University of Louisville School of Nursing.

Results

The Get fit with Grizzlies questionnaire (GFWG) was completed by five child participants. Overall, percentage scores on knowledge and behavior sections of this questionnaire showed improvements in knowledge and behaviors when comparing pre and post-test results. All five participants correctly answered question three which asked: “how long should you exercise each day,” which was an improvement from the pre-test which was 60%. Also, behavior based items discussing the length of screen time (T.V. and computer/video games), and items asking how often physical activity was performed, displayed improvements from 20-40% respectively on the pre-tests to 80% on the post-tests. Only two children completed the final follow up (6 weeks after the end of the program), and their scores for these items improved also. Table 1 displays the GFWG questionnaire results and the percentages. Descriptive and inferential statistics were analyzed using SPSS software version 26.

The Physical Activity Questionnaire for children (PAQ-C) was used to assess physical activity behaviors. Each child participant (n=5) had a total mean score for questions 1-9 on the pre and post-test (6 weeks after the intervention). Follow up scores (six weeks after the end of
the program) were evaluated also, but only two of the five participants completed the scale. Pre-test mean scores were 2.20 and post-test mean scores improved to 3.20. Table 2 displays the results of the PAQ-C scale for pre and post-test results.

A paired samples t-test (Table 2) was conducted to evaluate the impact of the intervention on the Physical Activity Questionnaire for older children (PAQ-C). The children’s mean PAQ-C scores increased significantly from baseline (Pre-test) (2.20 ± .84) to the six-week, post-test (3.20 ± .84), $t(4) = 3.16, p < .001$). The mean increase in PAQ-C scores was 1 with a 95% CI ranging from .12 to 1.9. The magnitude of effect was large (eta squared = .71).

Demographic data was also evaluated. Age variation ranged from nine years of age to 13 years of age with the median age being 11 years of age. Gender was also included in the data set. There were four female participants and one male participant. Gender did not play a significance in the results.

**Discussion**

**Interpretation**

The positive results of this program indicate the program can be successful when replicated in an urban setting after school site. The GFWG questionnaire showed positive results with several of the knowledge and behavior based questions. The child participants were able to score 100% on several of the post-test items that asked about “how long should you exercise every day,” “what is a calorie,” and “what are the five food groups.” Also, post-test results for the behavior based questions also showed that physical activity and screen time behavior percentages improved from pre-test. Based on these results, implementation of this program can help children recognize these unhealthy behaviors and work to change them.
The PAQ-C questionnaire also showed a positive increase in physical activity behaviors from pre to post-test. Item analysis indicated that implementation of this program improved activity behaviors in the participants. The mean score increased from 1.2 on the pre-test to a 2.4 on the post-test. Some of the activities such as “walking for exercise, jogging, skipping, and dancing” were popular choices and were considered easier activities for the targeted 9-12yo age group to do.

Success implementing this program demonstrates the significance of physical activity and nutrition counseling on children. In particular, these results show that introducing these topics with a structured program within an after school setting, can help children focus on healthier behaviors and increase their awareness of these topics.

**Limitations**

The program took place in one after school setting with only a subset of children between the ages of 9-12. Other after school programs in different communities were not assessed. Also, a small sample size (n=5) was utilized. There was no control over participation each week and there were absences by children that occurred during some of the intervention weeks. There were only two children out of the five that were able to take the final follow up post-test at week 12. These results were not able to show significant results compared to the pre and post-test that was previously administered due to the smaller sample size.

**Conclusion**

This project demonstrated feasibility of an after school program to educate and counsel children on physical activity and healthy eating. The after school setting was able to provide the appropriate time for children to focus on these subjects. The success of this program indicates that it is feasible and it is worthwhile to replicate this program in other after school settings.
Community efforts should continuously provide focus on the importance of physical activity in contrast to watching tv or tablets. Ultimately, the educational intervention that was used provided children the essentials of healthy eating and physical activity and after school settings should also continue to be used as a site to help increase awareness of obesity and introduce the topics of physical activity and nutrition. Providing children with physical activity and nutrition knowledge, can help decrease their overall risk of being overweight or obese throughout adolescence and adulthood, which will also improve their quality of life.
References


Appendix A

Causes of Childhood Obesity Fishbone Diagram

- Obesity education
  - School curriculums do not always include obesity education.
  - Inadequate knowledge of proper nutrition guidelines

- Social Determinants of Health
  - Access to grocery stores and poorer neighborhood income
  - Lack of healthcare and access to healthcare

- Parental/guardian involvement
  - Limited time to focus on obesity issues
  - Limited knowledge of obesity risk factors and solutions
  - Limited healthy food options in household

- Physical activity
  - Physical activity is limited during the school days
  - Social media and video games are common sedentary activities for more children and adolescents
  - Physical activity

Body mass index in relationship to a child's height is not discussed or measured

Obesity discussions during primary care appointments

Obesity discussions during well child/primary care exams

Increasing number of obese children
October 1, 2018

Jeff Alston, Director of Programs
Neighborhood House
201 N. 25th Street
Louisville, KY 40212

Dear Tylar Merritt,

I am writing on behalf of the Neighborhood House in regards to the implementation of your project in the upcoming spring. We greatly appreciate your interest in the Neighborhood House and your interest in implementing your education program within our after school program. On behalf of the Neighborhood House, I approve your project and working with our children within our organization. If you have any other questions or concerns, please don’t hesitate to contact me.

Sincerely,

Jeff Alston, Director of Programs
Neighborhood House
### Appendix C

**Weekly program sessions**

| Day 1: Strategy 1: Limit unhealthy choices for snacks and celebrations: provide healthy food choices 5 or more fruits and vegetables | Day 2: (5) follow up handout-what I like about fruits and vegetables  |
| Day 2: Pre test review Overview of 5-2-1-0 and handouts | Day 1: Strategy 2: Limit recreational screen time 2 hours of less of recreational screen time *Activities centered around games, playing outside, sports activities (handout) |
| Day 2: Follow up with handout, ideas about alternatives to screen time | Day 1: Strategy 3: Promotion of physical activity and defining physical activity 1 hour or more of physical activity *Scavenger hunts, group dancing activities, jump roping, hula hooping, sports definitions |
| Day 2: Follow up with activities and discussion of importance | Day 1: Strategy 4: Limit or eliminate sugary drinks; provide more water 0 sugary drinks, more water |
| Day 2: Follow up and questions |

#### Week 6

Program recap and Post Test
Discussion of everything included in the program
- Physical activity
- Healthy eating
- Limiting screen time
- Portions
- Nutrition labels
- Foods
### Appendix D

**Budget for DNP project**

<table>
<thead>
<tr>
<th>Item/Expense</th>
<th>Cost</th>
<th>Total (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy snacks for nutrition session</td>
<td>$1-$2 per snack x 10-15 children</td>
<td>$20-$30</td>
</tr>
<tr>
<td>Program manual</td>
<td>Free to purchase</td>
<td>Free to purchase</td>
</tr>
<tr>
<td>Poster Board-Trifold, poster board display materials (letters and word art), markers, crayons, pencils and pens</td>
<td>Free to purchase</td>
<td>$30</td>
</tr>
<tr>
<td>Printed materials for program</td>
<td>Cost may vary per type of handout or sheet of paper. .10-.12 cents for black and white .50-.60 cents for color paper</td>
<td>$60</td>
</tr>
<tr>
<td>Sugar activity with different beverages</td>
<td>Soda-$2 x2 Juices-$2 x2 Energy drinks-$3-$4 Water bottles-$2 Sugar-$2-$3 Measuring utensils-$5 Labels-$5</td>
<td>$25-$30</td>
</tr>
<tr>
<td>Physical Activity session materials</td>
<td>Jump rope Hula hoop</td>
<td>$10</td>
</tr>
</tbody>
</table>

Estimated Grand Total: $150-$160
Hello Families!

My name is Tylar Merritt and I am a nurse practitioner student at the University of Louisville and I am working on a project that involves educating children about healthy eating and physical activity. The purpose of this project to help children become more aware of healthy eating and physical activity and how learning about these two topics can help your child to be healthy in the future. I would like to ask permission for your child to participate in this program for the next 7 weeks. During this program, your child will participate in fun activities and games with their peers and learn about healthy eating, different types of foods, many examples of physical activities, and the importance of each of these activities. This program will take place during the after school program. If you would like for your child to participate, please sign your name below! If there are any questions or concerns, feel free to reach out to myself or the Neighborhood House staff!

Tylar Merritt (T0merr01@louisville.edu)

Parent/Guardian name: Child Name:
Appendix F
Get Fit with Grizzlies Student Questionnaire

1. A calorie is:
   a. A unit of weight
   b. A unit of food energy
   c. A unit of length
   d. A type of muscle

2. The five food categories are:
   a. Grains, vegetables, fruits, milk/dairy, and meats/proteins
   b. Grains, fruits, milk, dairy, & fats
   c. Grains, vegetables, fruits, meats, and proteins
   d. Grains, vegetables, fruits, milk/dairy, meats/proteins, and chocolate

3. How many minutes should a 4th or 5th grader exercise **EVERY DAY** (including Saturdays and Sundays)?
   a. 10 minutes
   b. 20 minutes
   c. 40 minutes
   d. 60 minutes

4. What **kind** of exercise should you do **EVERY DAY**?
   a. Light (very easy)
   b. Moderate to vigorous (making you kind of sweaty & breathing medium to hard)
   c. We should only exercise when we feel like it
   d. We shouldn’t be exercising every day

5. What is the **BEST** reason for stretching before and after exercising?
   a. Stretching helps us to waste time
   b. Stretching helps our muscles and our minds get ready for exercise
   c. Because it is boring
   d. We should NEVER stretch before or after we exercise

6. A good stretch for your **hamstrings** (back of thigh) is:
   a. The butterfly stretch
   b. The neck stretch
   c. The seated toe touch stretch
   d. The triceps stretch

7. Where is the **quadriceps** muscle group found?
   a. The thigh
   b. The shoulder
   c. The inner arm
   d. The back

8. Which of the following exercises is the best to use to strengthen the **triceps** muscle?
   a. Sit Ups
   b. Push Ups
   c. Heel Lifts
   d. Shoulder Shrugs

*The next set of questions asks about food/liquids you ate or drank **YESTERDAY**. Circle only **ONE** answer for as many times as you ate or drank that food/liquid.*
9. Yesterday, how many times did you eat a serving of fruit? (fruit juice is a “fruit”)
   a. 1
   b. 2
   c. 3
   d. 4 or more
   e. Not at all

10. Yesterday, how many times did you eat a vegetable or a salad?
    a. 1
    b. 2
    c. 3
    d. 4 or more
    e. Not at all

11. Yesterday, how many times did you drink carbonated (bubbly) drinks, such as Coke or Sprite? (DO NOT include diet drinks)
    a. 1
    b. 2
    c. 3
    d. 4 or more
    e. Not at all

12. Yesterday, how many times did you drink milk or eat cheese?
    a. 1
    b. 2
    c. 3
    d. 4 or more
    e. Not at all

13. Yesterday, how many times did you eat grains like bread, macaroni, or cereal?
    a. 1
    b. 2
    c. 3
    d. 4 or more
    e. Not at all

14. Yesterday how many times did you eat meat, such as a hamburger, chicken, or pork?
    a. 1
    b. 2
    c. 3
    d. 4 or more
    e. not at all

The next set of questions asks about physical activities you did YESTERDAY. Circle only ONE answer for the amount of time you did that activity.

15. Yesterday, how much time did you spend in front of the TV? (That’s So Raven = ½ hour)
    a. 1 hour
16. Yesterday, how long did you work on a computer, play video games, or use a computer for something that was not school work?
   a. 1 hour
   b. 2 hours
   c. 3 hours
   d. 4 hours or more
   e. None at all

17. Yesterday, how long did you exercise at a medium level (walking briskly) and/or high level (running/breathing hard)?
   a. 30 minutes
   b. 1 hour
   c. 2 hours
   d. 3 or more hours
   e. Not at all

18. Yesterday, how long did you exercise at a high level (running/breathing hard)?
   a. 30 minutes
   b. 1 hour
   c. 2 hours
   d. 3 or more hours
   e. Not at all
Physical Activity Questionnaire for older children (PAQ-C)

Name:_________________________ Age:___________

Sex:     M_______     F_______

We are trying to find out about your level of physical activity from the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe hard, like tag, skipping, running, climbing, and others.

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Mark only one circle per row.)

<table>
<thead>
<tr>
<th>Activity</th>
<th>No</th>
<th>1-2</th>
<th>3-4</th>
<th>5-6</th>
<th>7 times or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skipping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rowing/canoeing</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>In-line skating</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tag</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking for exercise</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bicycling</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Jogging or running</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Aerobics</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Baseball, softball</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dance</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Football</td>
<td></td>
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<td></td>
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<tr>
<td>Badminton</td>
<td></td>
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<tr>
<td>Skateboarding</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Soccer</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Street hockey</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Volleyball</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Floor hockey</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basketball</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ice skating</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Cross-country skiing</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ice hockey/ringette</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? (Check one only.)

   I don’t do PE .....................................................
   Hardly ever .....................................................
   Sometimes ......................................................
   Quite often .....................................................
   Always ...........................................................

3. In the last 7 days, what did you do most of the time at recess? (Check one only.)

   Sat down (talking, reading, doing schoolwork)......
   Stood around or walked around ............................
   Ran or played a little bit ....................................
   Ran around and played quite a bit ........................
   Ran and played hard most of the time .................

4. In the last 7 days, what did you normally do at lunch (besides eating lunch)? (Check one only.)

   Sat down (talking, reading, doing schoolwork)......
   Stood around or walked around ............................
   Ran or played a little bit ....................................
   Ran around and played quite a bit ........................
   Ran and played hard most of the time .................

5. In the last 7 days, on how many days right after school, did you do sports, dance, or play games in which you were very active? (Check one only.)

   None .............................................................. 1
   1 time last week ............................................... 2
   2 or 3 times last week ....................................... 4
   4 times last week ..............................................
   5 times last week ..............................................

6. In the last 7 days, on how many evenings did you do sports, dance, or play games in which you were very active? (Check one only.)
30

None ................................................................. 1
time last week .................................................... 2
or 3 times last week ............................................ 4
or 5 last week .....................................................
6 or 7 times last week ...........................................

7. *On the last weekend*, how many times did you do sports, dance, or play games in which you were very active? (Check one only.)

None ................................................................. 1
time ................................................................. 2
— 3 times ..........................................................
4 — 5 times ...................................................... 6
or more times ...................................................

8. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on the one answer that describes you.

A. All or most of my free time was spent doing things that involve little physical effort ...............................................................................................................

B. I sometimes (1 — 2 times last week) did physical things in my free time (e.g. played sports, went running, swimming, bike riding, did aerobics) ......................

C. I often (3 — 4 times last week) did physical things in my free time ...............

D. I quite often (5 — 6 times last week) did physical things in my free time ........

E. I very often (7 or more times last week) did physical things in my free time .......

9. Mark how often you did physical activity (like playing sports, games, doing dance, or any other physical activity) for each day last week.

<table>
<thead>
<tr>
<th>Day</th>
<th>Little</th>
<th>Very</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. Were you sick last week, or did anything prevent you from doing your normal physical activities? (Check one.)

Yes ...................................................……
No ............................................................

If Yes, what prevented you? ________________________________
### Table 1

*Get Fit with Grizzlies Student Questionnaire results*

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre test</th>
<th>Post test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge based questions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Calorie is</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>The five food groups are</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>How long should you exercise everyday</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>What kind of exercise should you do everyday</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Why should you stretch before/after exercising</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>A good stretch for your hamstrings is</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Where on the body is the quadriceps muscle?</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>What exercise strengthens the triceps muscle?</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Behavior based questions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yesterday, how many times did you eat fruit</td>
<td>60%</td>
<td>100%</td>
</tr>
<tr>
<td>Yesterday, how many times….vegetables/salad</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>Yesterday, how many times…soda/soft drinks</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>Yesterday, how many times…milk, cheese, dairy</td>
<td>40%</td>
<td>100%</td>
</tr>
<tr>
<td>Yesterday, how many times…bread, cereal, grains</td>
<td>100%</td>
<td>40%</td>
</tr>
<tr>
<td>Yesterday, how many times….meat, protein</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Yesterday, length of time watching tv</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>Yesterday, length of time on computer/video games</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>Yesterday, medium level exercise</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>Yesterday, high level exercise</td>
<td>20%</td>
<td>80%</td>
</tr>
</tbody>
</table>
Table 2

*Paired T-test comparison of the Physical Activity Questionnaire for children (PAQ-C) before the intervention (Baseline-pre-test) and after the intervention (six-week, post-test)*

<table>
<thead>
<tr>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAQ-C Baseline</td>
<td>2.20</td>
<td>± .84</td>
<td>3.16</td>
<td>4</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>PAQ-C six week post-test</td>
<td>3.20</td>
<td>± .84</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>