Spring 4-2016

Relationships between Parental Energy Balance-Related Behaviors and their Child's Weight Status and Performance on FITNESSGRAM® In-School Assessment

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By

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A THESIS

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Science

Major: Nutrition and Health Sciences

Under the Supervision of Professor Linda Boeckner

Lincoln, NE

May, 2016

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University of Nebraska, 2016

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BACKGROUND

In general, children learn habits by observing the behavior of family members, especially their parents. This study investigates the impact parental modeling of moderate-to-vigorous physical activity (MVPA) and sedentary behavior (SB) has on their child's risk of obesity and physical fitness (PF). It was hypothesized that children whose parents were more physically active and less sedentary would perform to a higher standard on their in-school PF assessment and would also have a lower risk of obesity.

OBJECTIVES

To develop successful childhood obesity interventions, more research is needed to clearly understand the impact of parents' MVPA and SB on the child. The purpose of this study was to examine the relationships between parental energy-related activity habits and their child's risk of obesity and performance on PF in-school assessments.

SETTING/PARTICIPANTS

Participants were 5th and 6th graders from a school in rural Nebraska. After completing FITNESSGRAM®, a MVPA and SB survey was sent home to the parents of the students. Of these 10-12 year olds, 47 males and 56 females returned usable parent surveys contributing to the final sample size of n=103. The PACER and Push-up data were chosen to evaluate the child's cardiovascular endurance and muscular strength.

RESULTS
Higher parental MVPA levels were significantly associated with better performance on the PACER by the child and a higher calculated VO_2max (r=0.215, p=.034). Additionally, lower parental SB levels were correlated with the ability to perform more push-ups indicating higher muscular strength of the child (r=-0.239, p=.015). There was no significant relationship between parental MVPA or SB and child weight status.

CONCLUSIONS AND IMPLICATIONS
Results from this study showed links between parental activity habits and child cardiovascular endurance and muscular strength indicating a need for parents, guardians and caregivers to lead by example and foster a pattern of modeling conducive to physical activity (PA).

Keywords: physical activity (PA), sedentary behavior (SB), physical fitness (PF), moderate-to-vigorous physical activity (MVPA), parental modeling, weight status

ACKNOWLEDGEMENTS

I want to sincerely thank my advisor Dr. Linda Boeckner for the countless times she read through my thesis and the valuable guidance and advice she has given me. I would not have been able to complete this project without her direction, wisdom, and expertise. She is a wonderful role model and mentor and I am grateful for our time together.

My gratitude extends to Dr. Shinya Takahashi and Dr. Lisa Franzen-Castle for their willingness to provide feedback during this process. It proved to be of immense value. Both of them have been a dependable source of information and encouragement.

I want to mention how much I appreciate Lori Rausch and her knowledge and understanding of the procedures surrounding the Nutrition and Health Science Department. Her insights helped smooth my way as a graduate student.

I want to thank the administration and teachers at Johnson Crossing Academic Center. Their assistance and cooperation with this project were vital in its success.

I would like to thank my father, mother and brother for their constant support and endless love.

And finally, but most importantly, I would like to thank God for his continual provision and blessings.

TABLE OF CONTENTS

Chapter I. Introduction……...……..…1

Chapter II. Literature Review……...……...…4

Chapter III. Methodology……..……...……..12

Purpose…..……...…….……13

Hypothesis……..……..……..……13

Objectives…….…….....…….…..…13

Data Collection Procedure…….……..…..…13

Participants…….……...……..……....……...…14

FITNESSGRAM®…….……....…….……15

Parent Survey …….……...…….....……..17

Figure 1 Sample Size Flow Chart…….……...…….……....…19

Data Analysis…….……..…….…...…..……19

Chapter IV. Results……..……...…....……21

Table 1 Descriptive Statistics of the Child Participants ……...…….……23

Table 2 Descriptive Statistics of Parental Physical Activity…….24

Table 3 Descriptive Statistics of the Parental Sedentary Behavior …….…..…24

Table 4 Parental Physical Activity and Child Data Correlations …….…..……26

Table 5 Parental Sedentary Behavior and Child Data Correlations …….…….28

Table 6 Descriptive Statistics by Child Weight Classifications …….……..30

Table 7 Effect of Child Weight Status on PACER (VO2max) and Push-up…....30

Table 8 Relationship between Child PACER (VO2max) and Push-up…….....31

Chapter V. Discussion……..…..…32

Limitations……...…37

Implications for Research……37

Chapter VI. Conclusions……..……..…39

References…….…..41

Appendices……..50

Appendix A – IRB – Parent Informed Consent (English)……51

Appendix B – IRB – Parent Informed Consent (Spanish)……54

Appendix C – Parent Survey (English).……57

Appendix D – Parent Survey (Spanish)……59

Appendix E – Parent Recruitment Letter (English)……..……61

Appendix F – Parent Recruitment Letter (Spanish)……..……63

Appendix G – Principal Letter of Support……..……..65

Appendix H – Parent Notification Form – KidQuest (English)…..……..67

Appendix I – Parent Notification Form – KidQuest (Spanish)…..……...…71

Appendix J – Youth Assent Form – KidQuest……..……75

Appendix K – District Letter of Support – KidQuest……..……..77

Appendix L – Administrator Letter of Support – KidQuest……..……80

Appendix M – Teacher Letter of Support – KidQuest……..……83

LIST OF MULTIMEDIA OBJECTS

Figure 1 Sample Size Flow Chart ……...…….……..……..……19

Table 1 Descriptive Statistics of the Child Participants …….....……...…23

Table 2 Descriptive Statistics of Parental Physical Activity…….……..…..24

Table 3 Descriptive Statistics of the Parental Sedentary Behavior ……...……..…..24

Table 4 Parental Physical Activity and Child Data Correlations ……..…….…..…26

Table 5 Parental Sedentary Behavior and Child Data Correlations ……...…..…..…28

Table 6 Descriptive Statistics by Child Weight Classifications ……...…..…..30

Table 7 Effect of Child Weight Status on PACER (VO2max) and Push-up…….…....30

Table 8 Relationship between Child PACER (VO2max) and Push-up……..... 31

CHAPTER I: INTRODUCTION

Childhood obesity is the focus of many public health efforts in the United States (US)[1] and is a community health concern in need of immediate action. In 2011-2012, 17.7% of children aged 6-11 and 20.5% of adolescents aged 12-19 were classified as obese[2]. Currently, it is estimated that 30% of children and adolescents residing in the US are overweight or obese[3]. The reasons for this escalation are not fully determined; however, a sedentary way of life, dietary changes, and personal lifestyle choices in combination with genetic predisposition are potential factors[4,5].

There are numerous physical, emotional and psychological health consequences that have been linked to obesity in children. These include metabolic syndrome[6], which leads to an increased risk of adult cardiovascular disease[7], and peer victimization, which occurs regardless of sociodemographic, social, and academic confounding factors[8,9]. Additionally, multiple studies have shown the association of pediatric and adolescent obesity with obesity in adults[10,11]. All consequences considered, it is vital that the habits learned at a young age are healthy and well established. Physical activity (PA) and physical fitness (PF) are recognized as important components of a healthy lifestyle, particularly the adolescent period seems to be of importance[12].

In general, children learn habits by observing the behavior of family members, especially their parents[13]. Childhood obesity results from a combination of a multitude of factors, one of which may include the home environment. This environment at home is multifaceted and is influenced by the physical surroundings, policies, and modeled behaviors by those living in the home[14]. Parents can model two types of behavior related to activity levels, that of PA and that of sedentary behavior (SB).

Previous research indicates that parents serve as role models for PA and SB and are also central in organizing and funding children's involvement in physical activities[15,16]. The link between obesity and physical inactivity or exercise is well established for both adults and children[17]. In contrast, more research is needed to evaluate the relationships between parenting practices and PA to develop effective strategies that target parental behaviors, preventing overweight and obesity in their young children[18]. Therefore, the purpose of this study was to examine the effect of parental energy balance-related behaviors on their child's risk of obesity and performance on PF in-school assessments.

CHAPTER II: LITERATURE REVIEW

Obesity is defined as an excess of body adiposity[19]. Today, there are multiple ways to measure obesity, the most common being body mass index (BMI), especially for the general public. In children and teens (ages 2-20), age- and gender-specific growth charts are used to calculate BMI using their weight and height, then matching their BMI to the corresponding BMI-for-age percentile, using their age and gender. Those who are between the 85th and less than the 95th percentile are considered overweight. Children whose BMI-for-age is in the 95th percentile or higher are considered obese[20].

Multiple studies have shown the association of pediatric and adolescent obesity with obesity in adults. The Bogalusa Heart Study documented that overweight children were very likely to become obese adults and 77% attained an adult BMI greater than or equal to 30 indicating that they were obese[10]. Another study showed that overweight children are prone to becoming overweight adults, especially if they have an obese parent[11]. Because of the increased odds of overweight children becoming overweight adults, it is important to develop obesity prevention tactics targeting weight-related behaviors such as PA and SB, two behaviors effecting PF.

According to the World Health Organization, PA is defined as any bodily movement produced by skeletal muscles that require energy expenditure. This should not be confused with exercise, which is a subcategory of PA that is planned, structured, repetitive, and purposeful in the sense that the improvement or maintenance of one or more components of PF is the objective[21]. Moderate-intensity PA requires a moderate amount of effort and noticeably accelerates the heart rate; examples of this include brisk walking, gardening and housework. Vigorous-intensity PA requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate; examples of this

include running, aerobics, and fast cycling[22]. The American College of Sports Medicine recommends that adults engage in at least 150 minutes of moderate-intensity exercise per week. These recommendations can be met through 30-60 minutes of moderate-intensity exercise (five days per week) or 20-60 minutes of vigorous-intensity exercise (three days per week)[23].

Children spend the majority of their time either at school or at home, making these two locations chief areas in encouraging them to participate in PA. PA at school accounts for approximately 45% of the total weekday moderate-to-vigorous physical activity (MVPA) in children[24] and physical education (PE) classes significantly contribute to activity levels[25]. However, one study objectively assessed the relationship between minutes per day of PA at school and BMI in rural elementary school children and found that, regardless of grade level, children accrued less than 60 minutes per day of total PA and less than 20 minutes per day of MVPA during a 6-hour school day[26], indicating the need to supplement PA during the school day with PA at home.

Multiple studies have found that the home environment and parental habits concerning MVPA could potentially influence child PA. One study examined the home food environment, home PA environment and home media environment, concluding that each domain might directly or indirectly influence several weight-related behaviors, which in turn influence BMI[27]. Family support of PA is significantly related to child MVPA, and two influencing factors include parent enjoyment of PA and the importance parents placed on their child participating in sports and PA[28]. Gustafson and Rhodes concluded that parental support such as encouragement, involvement and facilitation (transportation, equipment, access to opportunities to be active) might mediate any

parent-child PA relationship[29]. Additionally, the attitude that parents have toward PA and the example they set with their own exercise habits can have a direct influence on their children's PA; more specifically, their support of PA, their own level of PA, and their enjoyment of PA may predict the extent to which their children will participate in PA with sufficient intensity and duration[30].

Not only can caregivers set a good example by leading an active lifestyle themselves, but they can also control various elements of the home environment[31], thereby heavily influencing environmental factors that affect a child's risk of obesity[32]. Recent research shows there are several modifiable physical and social home environment variables that are related to children's PA, SB and weight status. Examples of these variables include the presence of a basketball hoop at/or around the home[33], regularly eating the evening meal as a family, obtaining adequate amounts of nighttime sleep[32], and removing screen-media equipment from children's bedrooms[34,35]. Building on that, research suggests that eliminating screen-media equipment from children's bedrooms may increase their PA[36], and as a result decrease the risk of being overweight or obese.

The opposite of PA might be classified as time spent doing sedentary activities. SB is defined by any waking activity characterized by an energy expenditure of less than or equal to 1.5 metabolic equivalents and a sitting or reclining posture[37]. There are many types of SB that can contribute to weight gain and many weight-loss programs focus on reducing the amount of sedentary minutes in the day. Epstein et al. examined ninety families with obese 8-to 12-year-old children and obtained results that supported reducing sedentary behaviors as a treatment for childhood obesity[38].

In the present day, one of the most significant forms of SB is classified as screen time. This is an area where parental roles may be important in explaining obesity in children. Family life has changed dramatically over the past two decades, with much easier access to television than in the past[39]. For instance, school-age children of working parents may now increasingly spend their afternoon hours unsupervised, which might increase their television watching time[40]. One study found that interventions to reduce children's screen time might be most effective when parents prevent the presence of a TV, computer, or game console in the child's room[41]. With the omnipresence of technology today, people are less likely to use leisure time to be active outdoors. That said, parents can influence children's screen time by having rules about watching TV and by controlling the physical home environment.

In the past, researchers have suggested targeting sleep in weight management interventions for low-income children. Their specific suggestions were to utilize a consistent implementation of a bedtime routine, reduce chaos and disorganization in the home environment, and encourage caregiver monitoring of screen time[42]. Screen time does not only influence how physically active a child is, but also has been linked to consuming an unhealthy diet. A study researching the family food environment found that increased TV viewing time was associated with an increased energy intake, increased sweet snack and drink consumption, and a decreased vegetable intake[43]. As time goes on, it is becoming more and more clear that screen time is an important behavioral factor related to obesity and cardio-metabolic risk indicators in children[44].

Physical inactivity is an important contributing factor to childhood obesity. Additionally, research indicates that obese children engage in less PA, compounding the

problem, especially long-term. Literature focusing on pre-school children found that overweight boys participated in significantly less PA during the day than non-overweight boys[45]. In addition, overweight youth were found to be less likely to have participated on sport teams and in exercise programs and were more likely to have overweight parents[46]. Inactivity may contribute to weight gain, which then contributes to even greater inactivity, exacerbating the problem and giving another reason why it is important to prevent obesity, especially early in life.

It is becoming evident that PA and exercise are essential parts of daily life. One study found that higher levels of MVPA in youth appear to be associated with better cardio-metabolic risk factors regardless of the amount of sedentary time[47]. Nonetheless, reducing time spent sedentary to bouts of less than 30-minute increments throughout the day may also contribute to improved cardio-metabolic health in overweight/obese children[48]. The realization of the importance of PF is what motivates the drive for PF testing in schools.

Fitness testing for youth emerged from the field of PE, which has a long-standing history of fitness testing[49]. In 1982, the Cooper Institute introduced FITNESSGRAM® into schools as a way of fitness testing and results were presented using percentile norms[50]. Today, FITNESSGRAM® has been adopted by the Presidential Youth Fitness Testing Program and has been used by thousands of teachers with millions of youth in schools worldwide to help teachers track health-related PF and PA information over time[51]. FITNESSGRAM® has also been used in many studies surrounding child health-related PF[52,53].

There are short- and long-term positive outcomes of interventions aimed at changing both dietary intake and PA levels among obese children[54,55]. Recommendations for promoting PA in obese children are to boost self-efficacy perceptions regarding exercise, increase awareness of community areas for PA, and increase parental modeling of PA[56]. There has been some success in limiting television-viewing time through the use of television locking devices[57]. It is also important to take into consideration the physical and social neighborhood environments when creating a safe and appealing area for PA[58].

School-based intervention programs have also been successful in increasing PA and decreasing the incidence of obesity in children. It seems that individual schools and teachers can effectively design interventions, as evidenced by increased total day PA levels of students[59]. School-based interventions have shown that PE classes can provide vigorous PA and promote skills necessary for developing good activity patterns[60]. As far as MVPA is concerned, recess is a very important part of the day and recent research has shown that a structured recess is feasible to implement and can significantly increase MVPA[61]. Finally, PA breaks in the classroom can effectively improve behavior and increase in-school PA and overall PA without any change in basic curriculum[62,63].

Many studies have researched the link between parental PA and child PA[64-67], but few have investigated the relationship between parental MVPA and SB with child health-related PF and weight status. More research is needed to clearly understand how physical, social and individual factors interact within the family home space to influence children's SB and PA[68]. Moderate to strong evidence has been found in relation to the association of parental encouragement/support of PA and parents' own PA levels with the

child's PA[69]. However, the impact parental PA has on the child's PA still needs to be elucidated to help develop successful obesity interventions[70]. Finally, there remains a gap in understanding between the extent of parental influence on children's physical activity behaviors[71]. Therefore, because PA is positively associated with PF[72], this investigation aims to examine the relationship between parental energy balance-related behaviors with child health-related PF and weight status.

CHAPTER III: METHODOLOGY

PURPOSE

The purpose of this study was to examine the effect of parental modeling of self-reported MVPA and SB on their child's risk of obesity and performance on PF in-school assessments. This study investigated how parental activity levels may have a relationship with the health-related PF of their child by obtaining measures to indicate their cardiovascular endurance and muscular strength. Parent self-reported daily activity levels were analyzed along with their child's FITNESSGRAM® assessment to evaluate the possible impact of parental energy-balance related behaviors on youth. These impacts could potentially point out influential target areas in which obesity prevention and PA intervention programs should focus.

HYPOTHESIS

It was hypothesized that children whose parents were more physically active and less sedentary would perform to a higher standard on their in-school PF assessment and also have lower risk of obesity.

OBJECTIVES

1. To determine if there is a relationship between parental modeling of MVPA and SB with the weight status and health-related PF of their children.
2. To examine what types of parental MVPA and SB are most strongly related to the weight status and health-related PF of their children.

DATA COLLECTION PROCEDURE

This study was conducted as a branch of a larger research study funded by the Transdisciplinary Childhood Obesity Prevention Program. This three-year study (January 2013-December 2015) aimed to determine the efficacy of a nutrition education

intervention program called KidQuest on promoting behavior change and improving nutrition related knowledge. KidQuest was developed by South Dakota State University and includes nutrition curriculum integrated with PA lessons designed for students ages 9-12. The program was evaluated using pre- and post-surveys and FITNESSGRAM® (Version 10.0, 2013, The Cooper Institute[51]) to determine nutrition and PA knowledge/behavior changes through the use of intervention and control groups. FITNESSGRAM® was chosen as the testing procedure because it has been adopted by the Presidential Fitness Testing Program and the measurements were already a part of the school's testing protocol. Before collecting data, Institutional Review Board (IRB) approval was gained and parental notification forms (Appendices H-I) and youth assent forms (Appendix J) were acquired. Letters of support from the district (Appendix K), an administrator (Appendix L), and teachers (Appendix M) were also obtained.

For this particular study, only the Progressive Aerobic Cardiovascular Endurance Run (PACER) and Push-up scores, as well as the height and weight data of the subjects from the KidQuest study, were used. After gaining support from the principal (Appendix G), separate IRB approval was acquired to gather new information about self-reported parental MVPA and SB through a survey (Appendices C-D). Coupled with the survey was an informed consent form (Appendices A-B), which was returned in an envelope with the completed survey, and a recruitment letter describing the study to the parents (Appendices E-F).

PARTICIPANTS

Participants were 5th and 6th graders and their parents who were recruited from a school in rural Nebraska that was already participating in the ongoing KidQuest PA and

nutrition intervention study. Of these 10-12 year olds, 47 males and 56 females returned surveys eligible for analysis contributing to the final sample size of n=103.

FITNESSGRAM®

FITNESSGRAM® is a nationally accredited activity and fitness assessment used to gather information on the PF of students. The child participants completed the FITNESSGRAM® in-school PF exam in February of 2015. The tests were administered by individuals trained on proper FITNESSGRAM® protocol and completed in the regularly scheduled PE class. Each student completed the PACER, Push-up, Curl-up, Sit-and-reach, and Trunk lift tests. For this particular study, data from the PACER and Push-up tests were included to evaluate cardiovascular endurance and upper body muscular strength. Their height and weight were recorded as well.

The PACER was chosen to evaluate cardiovascular endurance and aerobic capacity and has excellent reliability and validity in estimating VO_2max[73]. The PACER is a multistage fitness test adapted from the 20-meter shuttle run test published by Leger and Lambert[74] in 1982 and revised in 1988. The test is progressive in intensity, meaning it is easy at the beginning and gets more difficult toward the end. It also provides a built-in warm-up and helps children to pace themselves effectively. The objective is to run as long as possible with continuous movement back and forth across a 20-meter space at a specified pace that gets faster each minute. VO_2max was calculated using the equation described by Boiarskaia et al.[75]

The participants were lined up alphabetically with the help of the teachers and divided into groups of 4-6. Once in groups, colored shirts were distributed to the students in order to keep track of who was in which group. The participants were then given

instructions on how to complete the test and when to stop. The first time the participant did not reach the line by the time of the beep, he or she stopped at their location and reversed direction, attempting to get back on pace. The participant was told to stop when they failed to reach the line by the time of the beep a second time. The two misses did not have to be consecutive. A CD player was used to play the FITNESSGRAM® PACER CD's for the students to listen to while completing the test. Each student's score was recorded. The score is defined by the number of laps completed. A lap is equivalent to one 20-meter completion.

The Push-up test was used to evaluate muscular strength and endurance of the upper body. Strength and endurance of the muscles in the upper body are important in activities of daily living, maintaining functional health and promoting good posture. It is imperative that children and youth learn the importance of upper body strength and endurance as well as methods to use in developing and maintaining this area of PF. The 90-degree push-up test has generally been shown to produce valid and consistent measures[76] but reliability depends on how it is administered[77]. The objective is to complete as many 90-degree push-ups as possible at a rhythmic pace.

For the Push-up test, procedures for dividing the participants into groups were the same as the PACER. Once in groups and wearing the same colored shirt, the participants were given instructions on how to complete the test and when to stop. Push-ups were performed to a cadence found on the FITNESSGRAM® CD which was played on a CD player. The students would begin in the "up position" and once the CD cadence started, would move to the "down position" and then back up when directed by the CD. The participants were allowed one form correction (warning) and then asked to stop on their

second form correction. At the end of the test, the researcher recorded each participant's score. The Push-up score is defined as one repetition completed.

Today, age- and sex-specific growth charts are used to calculate body mass index (BMI) in children and teens (ages 2-20) using the child's weight and height then matching their BMI to the corresponding BMI-for-age percentile for their age and sex. Those who are between the 85th and less than the 95th percentile are considered overweight. Children whose BMI-for-age is in the 95th percentile or higher are considered obese[20]. The height and weight measurements obtained from FITNESSGRAM® were used to calculate BMI and BMI-for-age percentile as described by the Centers for Disease Control and Prevention[78].

Height and weight measurements were obtained in a private location in a section of the gym to protect the confidentiality of the participant. Students were instructed to remove their shoes and stand up against a wall that had been premeasured with a measuring tape. Height was recorded to the nearest quarter of an inch. Weight was measured in kilograms using an electronic scale and recorded to the nearest tenth. BMI was calculated after all testing procedures were finished.

PARENT SURVEY

The survey that one parent from each household filled out was adapted from the Neighborhood Impact on Kids (NIK) study funded by the National Institutes of Health[79]. The instrument has been used in multiple publications[80] and most scales have acceptable test-retest reliability[81]. Only the portion of the survey that related to parental MVPA and SB was used. The MVPA portion of the survey asked how many days and minutes per week the parent performed sports, fitness and recreational (leisure) activities at both the

vigorous and moderate intensity levels. The SB portion of the survey asked caregivers to indicate on average how many minutes per day they spend watching television/videos/DVDs, using the internet, email or other electronic media for leisure, read a book or magazine for leisure, do work at home (including reading, writing, or using the computer), and ride in the car. Parental demographics could not be collected because of school policies regarding privacy of the family.

Surveys were distributed in PE classes to the children to take home to their parents and bring back upon completion. Parent surveys were given to students who had parental consent to participate in the KidQuest study during the 2014-2015 school year (n=474); therefore, the data for FITNESSGRAM® would be available to access. The surveys were coded with the same ID numbers that the children were assigned when FITNESSGRAM® testing began. As a result, their FITNESSGRAM® data were matched with the results from the parent survey. A Spanish version of both the survey and informed consent were available to those students who had Spanish listed as their primary language at home.

The PE teachers were instructed to place the returned envelopes containing the completed survey and informed consent into a designated storage bin that only the researchers had access to. Incentives for filling out the survey were not offered and reminders were not sent out to the parents because contact information was unavailable due to school policies regarding privacy. Because of absences, 453 surveys were physically handed to students to take home to their parents. Of the surveys handed out, 151 surveys were returned, making the return rate 33.3% (Figure 1).

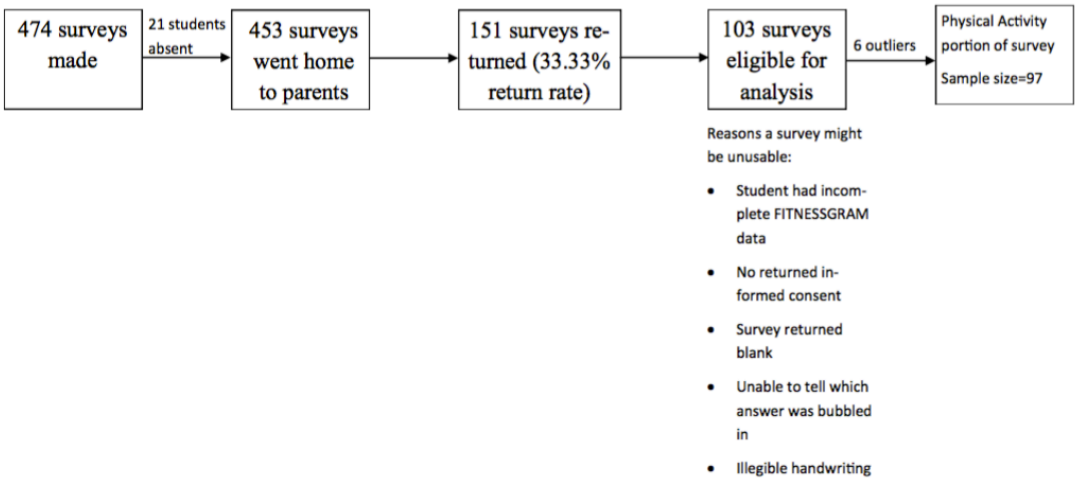

Figure 1 Flow chart depicting how the final sample size (n=103) was achieved

DATA ANALYSIS

The statistical analysis was executed using IBM SPSS Statistics for Windows (Version 22.0, 2013, IBM Corp). The means and standard deviations were found for the child data (age, BMI, percentile rank, PACER test, estimated VO_2max, and push-up test) and each question on the parent survey. Data was found to be approximately normal. Relationships between individual child variables and his/her parent/guardian reports were investigated. Relationships were also investigated between each individual child PACER score (number of completed laps), estimated VO_2max (ml/kg/min) and Push-up score (number of completed repetitions). Relationships were analyzed using Pearson Correlation Coefficients, with an alpha level of $P<0.05$.

Of the original 103 usable surveys, six parents/guardians indicated they had leisure time MVPA that were two standard deviations (SD=359.9) above the mean (M=293.2), giving the researchers reason to question the validity and feasibility of those data points. Data were analyzed both with and without these six outliers. When outliers (parent/guardians who reported more than 1012 minutes/week of physical activity) were

removed from the final analysis the average leisure time MVPA was 225.9 minutes per week, with a standard deviation of 215 minutes. Removing the outliers decreased the standard deviation by 40.3%. Rationale for reporting data without the six excessively high MVPA data points was the significant decrease in standard deviation upon removal, in addition to the likelihood that the participant misreading the question, including MVPA not classified as “leisure”.

CHAPTER IV: RESULTS

Table 1 shows the descriptive statistics of the child participants including age, BMI, BMI-for-age percentile, PACER, estimated VO_2max, and Push-up. All average measurements for PACER and Push-up tests, estimated VO_2max and BMI fall into FITNESSGRAM®'s Healthy Fitness Zone except for the females estimated VO_2max (M=37.22 ml/kg/min) which is below the cutoff of 40.2 ml/kg/min for the average 11 year old.

Table 2 overviews the averages from the parental MVPA portion of the survey both with and without the six outliers. On average, with the sample size of n=103, the parents reported that they participated in 293.2±359.9 minutes per week of total MVPA. With the six outliers taken out, the parents reported that they participated in 225.9±214.96 minutes per week of total PA, decreasing the standard deviation by 40.3%.

Table 1 Descriptive Statistics of the Child Participants

	Overall (mean ± SD) (N=103)	**Males (mean ± SD) (N=47)**	**Females (mean ± SD) (N=56)**
Age	10.9 ± 0.72	11.0 ± 0.77	10.8 ± 0.7
BMI (kg/m^2)	20.5 ± 4.3	19.8 ± 4.1	21.0 ± 4.3
BMI-for-age percentile	66.6 ± 28.3	62.4 ± 29.3	69.4 ± 27.3
PACER (laps)	24.3 ± 14.5	27.6 ± 15.0	21.6 ± 13.5
Estimated VO_2max (ml/kg/min)	40.5 ± 7.0	44.0 ± 5.9	37.4 ± 6.4
Push-up (reps)	12.8 ± 10.0	12.8 ± 8.9	12.8 ± 10.9

Table 2 Descriptive Statistics of Parental Physical Activity

	With Outliers		Without Outliers	
	N	**(mean ± SD)**	**N**	**(mean ± SD)**
Total Physical Activity (mins/week)	103	293.2 ± 359.9	97	225.9 ± 215.0
Vigorous Physical Activity (mins/week)	103	122.6 ± 160.2	97	99.9 ± 117.4
Moderate Physical Activity (mins/week)	103	170.6 ± 280.3	97	126.1 ± 138.3

Table 3 Descriptive Statistics of the Parental Sedentary Behavior

	N	**Mean ± SD**
Total Sedentary Behavior (mins/day)	102	294.0 ± 154.5
Watch television/videos/DVDs (mins/day)	101	83.0 ± 56.9
Use the internet, email or other electronic media for leisure (mins/day)	102	68.7 ± 57.6
Read a book or magazine for leisure (mins/day)	102	26.9 ± 30.2
Do work at home (including reading, writing, or using the computer) (mins/day)	102	59.1 ± 66.8
Ride in a car (mins/day)	101	57.3 ± 50.8

Results from the SB questions on the survey (Table 3) showed that parents on average had 293.97±154.52 minutes of SB per day, the majority of which was from watching television/videos/DVDs (M=83.02, SD=56.9). The correlation between the average total minutes of leisure-time MVPA for the parent and the child's cardiovascular endurance as measured by the FITNESSGRAM® PACER was r=0.215 (p=.034) as seen in Table 4. This indicates a small positive relationship between the minutes per week the parent was physically active during leisure time and the score their child received on the PACER, which is directly related to estimated VO_2max. There was no significant relationship between parental physical activity per week and the child's BMI (r=-0.067, p=.517), estimated VO_2max (r=0.151, p=.140), or Push-up score (r=0.112, p=.275).

When MVPA was broken into vigorous and moderate intensity and analyzed separately, the correlation of parents' vigorous intensity PA to estimated child VO_2max (r=0.215, p=0.034) and PACER (r=.262, p=.01) was stronger compared to the correlation of parents' moderate intensity PA to child VO_2max(r=0.052, p=.615) and PACER (0.112, p=.273). The significant positive relationship of child estimated VO_2max and PACER with parent vigorous intensity PA signifies that those parents who performed higher levels of vigorous intensity exercise had children who could run longer on the PACER test and had higher cardiovascular endurance.

Table 4 Parental Physical Activity and Child Data Correlations

	N	BMI (kg/m^2)		Estimated VO_2max (ml/kg/min)		PACER (laps)		Push-up (reps)	
(Minutes per Week)		Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Vigorous Intensity + Moderate Intensity Physical Activity	103	.028	.777	.027	.784	.047	.636	-.040	.691
Vigorous Intensity Physical Activity	103	.014	.886	.084	.401	.091	.362	.005	.961
Moderate Intensity Physical Activity	103	.028	.778	-.013	.899	.009	.931	-.054	.590
	Six outliers removed								
Vigorous Intensity + Moderate Intensity Physical Activity	97	-.067	.517	.151	.140	.215*	.034	.112	.275
Vigorous Intensity Physical Activity	97	-.126	.220	.215*	.034	.262**	.010	.191	.061
Moderate Intensity Physical Activity	97	.003	.975	.052	.615	.112	.273	.012	.907

*. Correlation is significant at the p<0.05 level (2-tailed).

**. Correlation is significant at the p<0.01 level (2-tailed).

The correlation between the total minutes of daily SB reported by the parent and the child's muscular strength as measured by the FITNESSGRAM® Push-up test was r=-0.239 (p=.015) (Table 5), indicating a small negative relationship between the minutes per day the parent was sedentary and the score the child received on the Push-up test. In addition, there was a small negative relationship (r=-0.198, p=.046) between the total minutes of SB the parent had per day and the child's estimated VO_2max (M=40.45±6.95). This is congruent with the hypothesis that children whose parents are less sedentary during the day are more likely to do better on in-school PF assessments. There was no significant relationship between parental SB per day and the child's BMI (r=0.119, p=.233) or PACER (r=-0.170, p=.087).

Closer examination of the types of parental SB indicates two of the five types of SB correlated with aspects of the children's PF assessment. Both the time reported per day by parents watching television (r=-0.235, p=.018) and time spent on the internet (r=-0.286, p=.004) were negatively correlated with the child's push-up scores. There was also a negative correlation between the time spent on the internet by the parent per day and the child's PACER score (r=-0.221, p=.026) and estimated VO_2max (r=-0.235, p=.018). This indicates that time spent on the internet and watching television by parents may be more influential on their child's PF performance than other types of SB.

Table 5 Parental Sedentary Behavior and Child Data Correlations

(Minutes per Day)	N	BMI (kg/m^2)		VO_2max (ml/kg/min)		PACER (laps)		Push-up (reps)	
		Corr.	Sig.	Corr.	Sig.	Corr.	Sig.	Corr.	Sig.
Total Sedentary Behavior	102	.119	.233	-.198*	.046	-.170	.087	-.239*	.015
Watch television/videos/DVDs	101	.055	.588	-.137	.171	-.188	.059	-.235*	.018
Use the internet, email or other electronic media for leisure	102	.181	.069	-.235*	.018	-.221*	.026	-.286**	.004
Read a book or magazine for leisure	102	-.038	.703	-.071	.479	-.099	.323	-.147	.139
Do work at home (including reading, writing, or using the computer)	102	.100	.318	-.074	.459	.014	.886	.012	.905
Ride in a Car	101	-.007	.945	-.051	.615	-.029	.775	-.061	.547

*. Correlation is significant at the p<0.05 level (2-tailed).

**. Correlation is significant at the p<0.01 level (2-tailed).

Table 6 separates the child participants into weight categories by BMI-for-age percentile rank; Underweight (<5%), Normal/healthy weight (5-85%), Overweight (≥ 85%), and Obese (≥95%). The majority of both the male and female participants fell within the normal weight category. Of the males, 15% were overweight and 17% were obese. PACER, Estimated VO_2max and Push-Up scores were on average highest for those in the normal/healthy weight category and decreased as BMI increased. Of the females, 14.25% were overweight and 23.25% were obese. Results of Push-up and estimated VO_2max were the same as the males in that the values decreased as BMI increased. However, for the females, the average PACER score for those categorized as obese (M=13.15) was higher than those categorized as overweight (M=10.9).

Tables 7 and 8 summarize the relationships between FITNESSGRAM® PF tests of each child participant. There was a strong negative correlation between BMI($r=-0.759$, $p=.001$) and estimated VO_2max (ml/kg/min) indicating that children who are overweight/obese have less cardiovascular endurance compared to their normal weight peers. There was a moderate negative correlation between BMI($r=-0.488$, $p=.001$) and the PACER score. In addition, there was a small significant negative correlation between BMI ($r=-0.351$, $p=.001$) and performance on the push-up test signifying that as BMI increases, muscular strength/endurance decreases. Table 8 illustrates the high correlation between the PACER and Push-up FITNESSGRAM® tests ($r=-0.563$, $p=.001$) and estimated VO_2max and Push-ups ($r=0.498$, $p=.001$

Table 6 Descriptive Statistics by Child Weight Classification

	Number of Children N (%)	PACER (laps) Mean ± SD	Estimated VO_2Max (ml/kg/min) Mean ± SD	Push-Up (reps) Mean ± SD
	Males (n=47)			
Underweight (<5%ile)	2 (4%)	25.0 ± 21.2	46.4 ± 7.1	8.5 ± 0.71
Normal weight (5-84.9%ile)	30 (64%)	32.1 ± 16.0	46.7 ± 4.5	14.3 ± 9.6
Overweight (≥ 85-94.9%ile)	7 (15%)	21.1 ± 3.9	41.1± 1.8	11.4 ± 5.9
Obese (≥95%ile)	8 (17%)	17.1 ± 9.4	40.0 ± 4.3	9.4 ± 9.1
	Females (n=56)			
Underweight (<5%ile)	0 (0%)	0	0	0
Normal weight (5-84.9%ile)	35 (62.5%)	27.1 ± 13.3	41.13 ± 4.4	16.6 ± 11.6
Overweight (85-94.9%ile)	8 (14.25%)	10.9 ± 6.3	32.24 ± 2.7	9.63 ± 6.6
Obese (≥95%ile)	13 (23.25%)	13.15 ± 8.5	30.70 ± 4.5	4.62 ± 4.3

Table 7 Effect of Child Weight Status on PACER (VO_2max) and Push-up Scores

	N	Pearson Correlation	Sig. (2-tailed)
		BMI	
VO2max (ml/kg/min)	103	-.759**	.001
PACER (laps)	103	-.488**	.001
Push-up (reps)	103	-.351**	.001

*. Correlation is significant at the p<0.05 level (2-tailed).

**. Correlation is significant at the p<0.01 level (2-tailed).

Table 8 Relationship between Child PACER (VO_2max) and Push-up Scores

	N	Pearson Correlation	Sig. (2-tailed)
PACER (laps) and Push-up (reps)	103	.563**	.001
Estimated VO2max and Push-up	103	.498**	.001

*. Correlation is significant at the p<0.05 level (2-tailed).

**. Correlation is significant at the p<0.01 level (2-tailed).

CHAPTER V: DISCUSSION

The primary goal of this investigation was to examine the relationship between parental energy balance-related behaviors on both their child's weight status and PF using FITNESSGRAM® as a method of evaluation. To our knowledge, this is one of limited studies to examine the association between parental activity levels and child PF. The findings from our sample reveal a potential link between parental modeling of MVPA and SB and their child's PF.

Specifically, higher parental MVPA levels were associated with better performance on the PACER by the child and a higher calculated VO_2max. This indicates that children were more likely to have higher cardiovascular endurance if their parents were more physically active. This supports the research hypothesis that children who have physically active parents are more likely to perform better on in-school PF assessments.

This finding is congruent with the positive association between parental PA and child PF that Voss and Sandercock found when assessing the connection between perceived parental PA and objectively measured fitness in schoolchildren[82]. It has also been documented that joint PA with family adults decreases the child's metabolic risk profile[83] indicating greater PF and that children's PA is related to that of their parents in distinct and quantifiable ways[29].

The underlying rationale to explain why parental MVPA correlates with the child's cardiovascular endurance might be that in general, children learn habits by observing their parents and the behaviors of family members[13]. When parents use their leisure time to engage in MVPA, their child is learning at a young age that PF is something of value and worth pursuing. Furthermore, greater parental MVPA is

associated with increased child MVPA[30]. Additionally, parents' exercise frequency significantly affects children's attitude toward PA and is positively associated with their intention to participate in PA[84]. Parental modeling is particularly important during preadolescence and becomes less influential with increasing age[85], indicating the need for authority figures to provide a positive example regarding daily activity levels, especially in the early years of life.

There was a distinct difference between the influences of vigorous PA compared to moderate PA on child PF. Parental vigorous PA was much more influential on their child's aerobic capacity compared to moderate PA. In our study, this finding suggests that it is not just the act of performing PA, but the intensity of PA a parent engages in can be a discriminating factor in determining health-related PF in their children; although, any type of PA is beneficial and can lead to health benefits[86].

Another pattern of modeling is that of SB. Our research suggests lower parental SB is correlated with higher muscular strength of the child. Patterns of SB between parents and children have been found to be related, especially among the obese[17] and because of this, the higher muscular strength seen in children whose parents reported a less sedentary lifestyle could be credited to those children leading a less sedentary lifestyle themselves. These findings are comparable to what another study found while examining the associations between PA, SB and PF in youth; those categorized as active/low sedentary were more likely to have a higher overall score of PF than those categorized as inactive/high sedentary[87]. Our research and the research of others might suggest that a highly sedentary pattern of modeling by the parents could be a determining factor in the PF of their children.

The inverse association found between parental SB and child muscular strength might be attributed to the fact that sedentary lifestyles often negatively affect body composition leading to decreased musculoskeletal fitness, and in children, failing to achieve the FITNESSGRAM® Healthy Fitness Zone in all areas, including muscular strength and endurance[88,89,52]. Previous studies have repeatedly demonstrated that SB, specifically TV viewing time, is associated with lower muscular strength and fitness[90,91]. Therefore, because parent and child SB levels are related[17] and SB is associated with decreased muscular strength, it could be deduced that the more sedentary the parent's lifestyle, the higher the risk for lower muscular strength in their children.

Of the five types of SB that were analyzed, two were significantly correlated with child PF including the amount of time spent watching television/videos/DVDs and the amount of time spent using the internet, email or other electronic media for leisure. Both can be categorized as screen time signifying that when developing physical inactivity and obesity interventions for children, targeting screen time is a crucial component. This finding adds another dimension to what has already been researched in the past; not only is parental screen time associated with child screen time[31], but parental screen time is also associated with lower PF of their children.

Although there was no significant difference in weight status among children who had physically active parents and children whose parents had a sedentary lifestyle, there have been studies that found low parental habitual PA to be significant predictors of childhood overweight[92] and that parental weight change is an independent predictor for child weight change[93]. Despite the multitude of parent-child obesity related literature,

there are limited articles that study the direct relationship between parental PA or SB and child weight status.

The evidence did show that children with a higher BMI had a lower aerobic capacity, which is comparable to the findings in a similar study using the FITNESSGRAM® PACER test as a measure of cardiovascular endurance. Here, the researchers found that the percentage of overweight/obese adolescents who did not meet the FITNESSGRAM® Health Zone for cardiorespiratory fitness was significantly higher compared to normal weight peers[53]. Moreover, children with a higher BMI also had lower muscular strength compared to their peers of normal weight. This is consistent with conclusions from various other studies associating weight status with muscular strength in children and adolescents[94,95].

One of the main strengths of this study was the use of FITNESSGRAM® as the method of data collection for all child PF assessments. FITNESSGRAM® has been proven time and time again to accurately measure health-related fitness in school age children[90]. The positive associations found in this study between child weight status and PF stresses the importance of PF test adoption in all school systems and proves schools to be a prime location in identifying children with health-related risk factors. Factors that led to the success of this project were the support of the teachers and administration. Having staff within schools that recognize the importance of PF in youth and are supportive of PA interventions is important for the health and well being of the students. Also, using the PE class time demonstrated to be convenient for both the researchers and the teachers. Having a large enough space to conduct all PF testing is vital for this type of study.

Additionally, all FITNESSGRAM® data was collected and recorded by professionals trained in the FITNESSGRAM® testing protocol. Each fitness test was supervised and therefore ensures greater validity of the child's health-related fitness scores. Given the strengths, limitations should be evaluated and acknowledged.

One limitation is that the sociodemographic characteristics of the adult participants were unavailable to the researchers because of school policies related to privacy. Sociodemographic information like age, gender, occupation, and education level of the parent/caregiver were unknown and could be potential confounding factors. Finally, among obese persons, there is a known discrepancy between reported versus actual behavior[96,97], leading to a potential exaggeration of the reported level of MVPA and SB of the parents/guardians, although parental weight status was not assessed.

There is a body of literature linking physical inactivity to obesity and parental obesity to childhood obesity, but few that examine parental activity habits and child PF/weight status. To determine how parental activity habits influence their children's PF, future research should focus on further analysis of the specific types of parental MVPA and SB, the time of day participation in these activities takes place, and their own personal reasons for including them in their day. Studies of this nature would provide insight on the ways in which children observe their caregivers and give direction for future family-based intervention programs.

Additionally, future studies using FITNESSGRAM® might also use the new FITNESSGRAM® Criterion-Referenced Fitness Standards[98] when analyzing child PF. These health zones separate students into categories based on evidence-based cut-offs for health-related fitness measurements and provide means of evaluating health-risk. Finally,

the theory of parental modeling assumes that the child is observing the behaviors of their parents. Future investigations might focus on directly measuring how much of the behavior the child is actually observing and how much of the behavior the child might also be participating in.

CHAPTER VI: CONCLUSION

In summary, parents play a critical role in shaping their child's PA and SB patterns, in turn, influencing their PF. Despite great efforts to develop PA and nutrition intervention programs targeting childhood obesity around the world, it continues to be of great concern. Results from this study assisted in demonstrating links between parental activity habits and child cardiovascular endurance and muscular strength indicating a need for parents, guardians and caregivers to lead by example and foster a pattern of modeling conducive to PA.

Investigating the effect of different parenting practices on energy balance-related behaviors is important to determine which practices should be recommended to parents to prevent obesity in their children[99]. Due to outcomes from this study, it is recommended to get the word out to parents and family members that their actions may shape the PF of youth. Motivating PE teachers to engage parents might be one of the best avenues for success in this area of obesity prevention. Word can be spread through use of parent handouts from schools in addition to sending home FITNESSGRAM® report cards.

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APPENDICES

APPENDIX A.

University of Nebraska – Lincoln

Institutional Review Board – Parent Informed Consent (English)

University of Nebraska Lincoln

College of Education and Human Sciences
Department of Nutrition and Health Sciences

INFORMED CONSENT FORM

Project Title: Parent Physical Activity and Sedentary Behavior Survey

Purpose of the Research:
The purpose of this study is to gather data on parental modeling of physical activity and sedentary behavior. The data will be analyzed with the research gathered from the Transdisciplinary Childhood Obesity Prevention Program.

Procedures:
You were recruited to fill out this survey on physical activity and sedentary behavior because of the current on-going study taking place in the Physical Education classroom at Johnson Crossing Academic Center. This survey will be cross-referenced with your child's performance on the Fitnessgram assessment if you return this informed consent form when you return the survey. The survey should not take more than a couple minutes to complete and consists of seven questions.

Risks and Potential Discomfort:
- This project involves less than minimal risk and does not affect the rights of the participants in any way.
- If there are problems resulting from participation, you may contact Dr. Linda Boeckner at the University of Nebraska-Lincoln at 402-472-7634.

Benefits:
The information gathered from the survey will be used to evaluate the effects of parental modeling of physical activity and sedentary behavior on child performance on the Fitnessgram physical fitness assessment.

Confidentiality:
Information will be compiled in aggregate form and no identification of individuals will be reported. All information obtained during this study will be stored in locked facilities and will be available only to the research team. Results of the research project may be published and available to the public.

Compensation:
You will not receive any compensation for filling out the survey.

Opportunity to Ask Questions:
You may ask questions concerning this research at any time during the project. If you have any questions concerning your rights as a participant that have not been answered by the

project investigator, or to report any concerns about the study, you may contact the University of Nebraska-Lincoln Institutional Review Board, telephone 402-472-6965.

Voluntary Participation & Freedom to Withdraw:
Your participation with this project is completely voluntary. You can choose not to participate or withdraw without affecting your relationship with the researchers or the University of Nebraska-Lincoln.

Consent:
You are voluntarily making a decision whether or not to fill out the survey. Your signature certifies that you have decided to participate having read and understood the information presented.

Signature of Participant:

_____ Date: _____

Signature of Researcher:

_____ Date: _____

For questions about the project contact:
Dr. Linda Boeckner
402-472-7634
lboeckner1@unl.edu

Kathryn Painter, Research Assistant
303-345-5858
katiempainter@comcast.net

APPENDIX B.

University of Nebraska-Lincoln

Institutional Review Board – Parent Informed Consent (Spanish)

University of Nebraska Lincoln

FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
Departamento de Nutrición y Ciencias De La Salud

FORMULARIO DE CONSENTIMIENTO INFORMADO

Titulo del Proyecto: Encuesta Acerca De La Actividad Física y El Comportamiento Sedentarito De Los Padres

Propósito de la Investigación:
El propósito de este estudio es recolectar datos sobre los modelos de actividad física y comportamiento sedentarito de los padres. Estos datos serán analizados con la investigación recopilada del Programa de Prevención Transdisciplinaria de Obesidad Infantil.

Procedimientos:
Usted fue escogido para llenar esta encuesta sobre la actividad física y el comportamiento sedentario debido al estudio actual que toma lugar en el salón de clases de Educación Física en el Centro Académico Johnson Crossing. Esta encuesta tendrá una referencia cruzada con el rendimiento de su niño en la evaluación Fitnessgram si usted regresa este formulario de consentimiento informado cuando regrese la encuesta. La encuesta no debe tomar más de un par de minutos para completar y consta de siete preguntas.

Riesgos y Posibles Molestias:

- Este proyecto implica menos del riesgo mínimo y no afecta los derechos de los participantes de cualquier manera.
- Si hay problemas con su participación, puede comunicarse con la doctora Linda Boeckner de la Universidad de Nebraska-Lincoln al 402-472-7634.

Beneficios:
La información obtenida de la encuesta se utilizará para evaluar los efectos del ejemplo causado por la actividad física y el comportamiento sedentario de los padres en el rendimiento del niño en la evaluación Fitnessgram.

Confidencialidad:
La información será recolectada de forma agregada y la identificación de los individuos no será reportada. Toda la información obtenida durante este estudio será almacenada en instalaciones cerradas y estará disponible sólo para el equipo de investigación. Los resultados del proyecto de investigación pueden ser publicados y estar disponibles para el público.

Compensación:
Usted no recibirá ninguna compensación por llenar la encuesta.

Oportunidad De Hacer Preguntas:
Usted puede hacer preguntas con respecto a esta investigación en cualquier momento durante el proyecto. Si usted tiene alguna pregunta acerca de sus derechos como participante que no han sido respondidas por el investigador del proyecto, o para reportar cualquier preocupación sobre el estudio, puede comunicarse con la Junta de Revisión Institucional de la Universidad de Nebraska-Lincoln, al teléfono 402-472-6965.

Participación Voluntaria Y Libertad De Retirarse:
Su participación en este proyecto es completamente voluntaria. Usted puede optar por no participar o retirarse sin afectar su relación con los investigadores o la Universidad de Nebraska-Lincoln.

Consentimiento:
Usted está tomando la decisión voluntaria de llenar o no llenar la encuesta. Su firma certifica que usted ha decidido participar después de haber leído y comprendido la información presentada.

Firma del Participante:

_____ Fecha: _____

Firma del Investigador:

_____ Fecha: _____

Para preguntas sobre el proyecto, contacte a:
Dr. Linda Boeckner
402-472-7634
lboeckner1@unl.edu

Kathryn Painter, Asistente de Investigación
303-345-5858
katiempainter@comcast.net

APPENDIX C.

Parent Survey (English)

5th and 6th Grade Parent/Guardian Survey

Sports, fitness and recreational activities (leisure)

1. Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate for at least 10 minutes continuously?

☐ Yes ☐ No → **If no, skip to question 4**

2. In *a typical week*, on how many days do you do vigorous intensity sports, fitness or recreational (leisure) activities?

Number of days ____per week

3 How much time do you spend doing vigorous-intensity sports, fitness or recreational activities *on a typical day*?

Hours ____ per day **OR** Minutes ____ per day

4. Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause small increases in breathing or heart rate for at least 10 minutes continuously?

☐ Yes ☐ No → **If no, skip to question 7**

5. In *a typical week*, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?

Number of days ____per week

6. How much time do you spend doing moderate-intensity sports, fitness or recreational activities *on a typical day*?

Hours ____ per day **OR** Minutes ____ per day

7. Please indicate how much time on a typical week day YOU do the following activities, when YOU are mostly sitting, and not moving around. Please think about the time from when YOU wake up until you go to bed.

	None	15 min/ day	30 min/ day	1 hour/ day	2 hours/ day	3 hours/ day	4 hours/ day
a. Watch television/videos/DVDs	O	O	O	O	O	O	O
b. Use the internet, email or other electronic media for leisure	O	O	O	O	O	O	O
c. Read a book or magazine for leisure	O	O	O	O	O	O	O
d. Do work at home (including reading, writing, or using the computer)	O	O	O	O	O	O	O
e. Ride in a car	O	O	O	O	O	O	O

APPENDIX D.

Parent Survey (Spanish)

Encuesta Para Los Padres/ Tutores Legales de 5to y 6to Grado

Deportes, estado físico y actividades recreacionales (tiempo libre)

1. ¿Practica algún deporte intenso, actividad física o actividad recreacional que causen altos incrementos en su respiración o ritmo cardiaco durante al menos 10 minutos consecutivos?

☐ Sí ☐ No → **Si no, salte a la pregunta 4**

2. En *una semana típica,* ¿Cuantos días practica usted deportes intensos, actividades físicas o actividades recreacionales?

Numero de días ____ por semana

3 ¿Cuánto tiempo dura practicando deportes intensos, haciendo actividades físicas o recreacionales *en un día típico?*

Horas ____ por día **O** Minutos ____ por día

4. ¿Practica algún deporte moderado, actividad física o actividad recreacional que causen bajos incrementos en su respiración o ritmo cardiaco durante al menos 10 minutos consecutivos?

☐ Sí ☐ No → **Si no, salte a la pregunta 7**

5. En *una semana típica*, ¿Cuantos días practica usted deportes moderados, actividades físicas o actividades recreacionales?

Numero de días ____ por semana

6. ¿Cuánto tiempo dura practicando deportes moderados, haciendo actividades físicas o recreacionales *en un día típico?*

Horas ____ por día **O** Minutos ____ por día

7. Por favor indique cuanto tiempo en un día típico de semana USTED hace las siguientes actividades, cuando USTED está principalmente sentado, y sin mucho movimiento. Por favor piense en el tiempo desde que USTED se despierta hasta que se acuesta a dormir.

	Ninguno	15 min/ día	30 min/ día	1 hora/ día	2 horas/ día	3 horas/ día	4 horas/ día
a. Ver televisión/videos/DVDs	O	O	O	O	O	O	O
b. Usar el internet, correo electrónico o cualquier otro medio electrónico por placer	O	O	O	O	O	O	O
c. Leer un libro o una revista por placer	O	O	O	O	O	O	O
d. Trabajar en la casa (incluye leer, escribir o usar el computador)	O	O	O	O	O	O	O
e. Montar en un carro	O	O	O	O	O	O	O

APPENDIX E.

Parent Recruitment Letter (English)

College of Education and Human Sciences
Department of Nutrition and Health Sciences

April 2015

Dear Parent,

My name is Kathryn Painter and I am currently pursuing a master's degree at the University of Nebraska-Lincoln in the Nutrition and Health Science Department. For my thesis project, I would like to investigate the effects of parental modeling of physical activity on child performance on the Fitnessgram physical fitness assessment. You are receiving this letter because you currently have a child in 5th or 6th grade at Johnson Crossing Academic Center.

I would like to invite you to fill out the attached short questionnaire regarding physical activity. The questionnaire will be evaluated along with the data we have been collecting in PE class using the Fitnessgram physical fitness assessment. In order to link the parent survey to the Fitnessgram data, the survey is coded with the same ID number as the student participants. **Once you have filled out the survey and signed the consent form, have your child return the survey and consent form in the envelope labeled "University of Nebraska-Lincoln Physical Activity Questionnaire" to Mr. Henry or Mr. Maxwell in PE class.** Filling out the survey is not mandatory; however, I would greatly appreciate your feedback.

If you have any questions, please feel free to contact me

Sincerely,

Kathryn Painter
Transdisciplinary Childhood Obesity Prevention Program Graduate Assistant
katiempainter@comcast.net
303-345-5858

Faculty Advisor
Linda Boeckner, PhD, RD
402-472-7634

APPENDIX F.

Parent Recruitment Letter (Spanish)

FACULTAD DE EDUCACIÓN Y CIENCIAS HUMANAS
Departamento de Nutrición y Ciencias De La Salud

Abril 2015

Estimado Padre,

Mi nombre es Kathryn Painter y actualmente estoy estudiando una maestría en en el Departamento de Nutrición y Ciencias de la Salud de la Universidad de Nebraska-Lincoln. Para mi proyecto de tesis, me gustaría investigar los efectos del ejemplo de la actividad física de los padres en el rendimiento del estudiante en la evaluación de condición física, Fitnessgram. Esta recibiendo esta carta porque usted tiene un niño en el quinto o sexto grado en el Centro Académico Johnson Crossing.

Me gustaría invitarle a completar el corto cuestionario adjunto con respecto a la actividad física. El cuestionario será evaluado junto con los datos que hemos ido colectando en la clase de educación física con la evaluación de condición física, Fitnessgram. Para poder vincular la encuesta de los padres a los datos del Fitnessgram, la encuesta tiene el mismo número de identificación que los estudiantes. **Una vez que haya llenado la encuesta y firmado el formulario de consentimiento, pídale el favor a su hijo que devuelva la encuesta y el formulario en el sobre marcado como "Cuestionario de Actividad Física para Universidad de Nebraska-Lincoln" a la clase de educación física del Sr. Henry o el Sr. Maxwell.** Llenar la encuesta no es mandatorio; sin embargo, yo agradecería mucho sus comentarios.

Si tiene alguna pregunta, no dude en ponerse en contacto conmigo

Atentamente,

Kathryn Painter
Asistente de Investigación Para el Programa Transdisciplinario Preventivo de Obesidad Infantil
katiempainter@comcast.net
303-345-5858

Asesora Académica
Linda Boeckner, PhD, RD
402-472-7634

APPENDIX G.

Principal Letter of Support

JOHNSON CROSSING ACADEMIC CENTER

Principal
Brent Cudly

Assistant Principal
Jason Chicoine

200 Johnson Rd.
Fremont, Nebraska 68025
(402)721-2003

Guidance Counselor
Dave Sutton

Guidance Counselor
Kim Bottorff

Research Compliance Services
2200 Vine Street
275 Whittier Research Center
Lincoln, NE 68583-0863

Dear Institutional Review Board at the University of Nebraska-Lincoln,

I have spoken with Kathryn Painter about her thesis project, which entails sending home with all 5th and 6th grade students a parent survey gathering data on parental physical activity and sedentary behavior. Her plan is to do this sometime late April 2015 or early May 2015, which works best for the school due to summer break quickly approaching and the 6th graders leaving to go to the middle school in August.

I support the methods and procedures described in Project #15091 and understand that the data will be used to explore the effects of parental modeling of physical activity and sedentary behavior on the corresponding child's performance during their Fitnessgram in-school physical assessment.

Sincerely,

Mr. Brent Cudly
Johnson Crossing Academic Center Principal

APPENDIX H.

Parent Notification Form – KidQuest (English)

IRB# 20131113574EP
Date Approved: 07/22/2014
Valid Until: 11/04/2014

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Nutrition & Health Sciences

PARENTAL NOTIFICATION FORM
Effectiveness of an In-School Nutrition and Physical Activity Program: KidQuest

Dear Parent/Guardian:

We are excited to announce that your child has the opportunity to participate in a research project associated with the educational program called KidQuest (Fitness, Food, and Fun). The goals of KidQuest are to increase physical activity patterns and improve overall eating behaviors. Participation in KidQuest allows students to learn more about nutrition and healthy food choices and ways to increase overall physical activity while having fun at the same time. The research project associated with this program involves six total data collection sessions over a six month time period and is designed to test the efficacy of KidQuest in the PE classroom.

We are requesting your permission to conduct the following evaluations. Our research and evaluation methods have been approved by the University of Nebraska-Lincoln Human Subjects Research Review Board. Your child will be asked to do the following:

- Youth survey to assess eating and physical activity and other wellness related behaviors. A copy of this survey can be requested by contacting the project director or leader listed on this consent form.
- Children's Body Image Scale (CBIS) to assess perceived body image. The child points to the picture they feel best represents their body image status. A link to the CBIS pictures can be found at: http://adc.bmj.com/content/94/12/944.full.
- Weight, height, and body mass index. Measurements will be done in a private setting with a lightweight shirt and shorts.
- Participation in the President's Physical Fitness Assessment Challenge to determine overall physical fitness

The fitness assessments will be done as the required testing for PE, however, the results will only be used for research if permission is granted. Measurements will be kept strictly confidential and, for research purposes, your child's name will not be connected with any of the tests; they will be identified by a randomized ID number. Participation in the evaluation components for the research project listed above are voluntary and you may withdraw your child from the research project at any time without penalty and without harming you or your child's relationship with UNL or your child's school. If your child is not involved in the research project, they will still complete the fitness assessments as their PE class assessment. Youth will be provided with the KidQuest program regardless of whether or not they participate in the evaluation measures listed above. Results (without any individual identifiers) may be submitted to professional journals and other publications and may be presented in a public setting.

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

If you have additional questions about the KidQuest program or the evaluation measures that will be used, or would like to voice concerns about the research, please contact the project director or KidQuest project leader listed below.

Project Director:
Linda Boeckner, PhD, RD
FCS Program Leader, Extension Nutrition Specialist
119B Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska-Lincoln
Lincoln, NE 68583-0806
Telephone: 402-472-7634 Fax 402-472-1587
Email: lboeckner1@unl.edu

Project Leader:
Johnna Hall, MS, RD
Extension Educator
119H Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska Extension
Lincoln, NE 68583-0806
Telephone: 402-472-3789 Fax 402-472-1587
Email: jhall21@unl.edu

Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 for the following reasons:

- You wish to talk to someone other than the research staff to obtain answers to questions about your rights as a research participant
- To voice concerns or complaints about the research
- To provide input concerning the research process
- In the event the study staff could not be reached,

If for some reason you **DO NOT** wish for your child to participate, please complete and return the form that is attached within one week of receiving this letter.

Thank you for you and your child's assistance with this important project.

I have read the information about the KidQuest program and associated research study being conducted by the University of Nebraska-Lincoln. Please check the box below **only if you DO NOT** want your child to take part in the research portion of this project. If you do not want your child to participate, please return this form within one week of receiving this letter.

☐ My child **DOES NOT** have my permission to participate

Name of Student	School	Grade

Signature of parent/guardian	Date

Please have your child return this form to their teacher ONLY if you DO NOT wish them to participate. Or you may mail the form to the following address:

Department of Nutrition and Health Sciences
Attn: Johnna Hall
110 Ruth Leverton Hall
University of Nebraska Lincoln
Lincoln NE, 68583-0806

APPENDIX I.

Parent Notification Form – KidQuest (Spanish)

FORMULARIO DE NOTIFICACIÓN A LOS PADRES
Efectividad de un Programa de Nutrición y Actividad Física en la Escuela: KidQuest

Estimado Padre / Tutor:

Estamos contentos de anunciar que su niño tiene la oportunidad de participar en un programa educativo llamado KidQuest (Actividad física, Alimentación y Diversión). Los objetivos del programa son aumentar los patrones de actividad física y mejorar los comportamientos generales de alimentación. La participación en KidQuest le permitirá a los estudiantes aprender más acerca de la nutrición y la elección de alimentos saludables y formas de aumentar la actividad física en general mientras se divierte al mismo tiempo. El proyecto de investigación asociado con este programa contiene seis sesiones de colección de datos durante un periodo de seis meses y esta diseñado para evaluar la eficiencia de KidQuest en el salón de educación física.

Estamos pidiendo su permiso para llevar a cabo las siguientes evaluaciones. Nuestros métodos de investigación y evaluación han sido aprobados por la Junta de Revisión de Sujetos Humanos de Investigación de la Universidad de Nebraska-Lincoln. Le pediremos a su niño que haga lo siguiente:

-Encuesta para los jóvenes con el propósito de evaluar la alimentación y la actividad física y otros comportamientos relacionados con la salud. Una copia de esta encuesta se puede solicitar poniéndose en contacto con el director del proyecto que aparece en este formulario de consentimiento.

-Percepción del estado de imagen corporal del niño según la Escala de Imagen Corporal Infantil (CBIS). El niño señala la imagen que siente que mejor representa su estado corporal. Un enlace a las imágenes CBIS se puede encontrar en: http://adc.bmj.com/content/94/12/944.full

Índice de masa corporal, altura y peso. Las medidas se harán en un ambiente privado con una camiseta y bermudas ligeras.

Participación en la prueba de desafío del Presidente para medir la Aptitud Física con el propósito de determinar el estado físico en general.

Las pruebas de aptitud física se harán como requisito de educación física, pero, los resultados serán usados para investigación solo si el permiso es otorgado. Las medidas serán estrictamente confidenciales y , por propósitos de investigación, el nombre de su niño no estará conectado a ninguna de las pruebas; serán identificados con un número de identificación generado al azar. La participación en los componentes de la evaluación del proyecto que se mencionan arriba es voluntaria y usted puede retirar a su niño en cualquier momento sin penalización y sin dañar la relación suya o de su niño con UNL o con la escuela de su niño. Aun si su niño no hace parte del proyecto de investigación, de todas maneras completaran las pruebas de aptitud física como parte de la evaluación de educación física. Los jóvenes contarán con el programa educativo KidQuest club, independientemente de si participan o no en las medidas de evaluación mencionadas anteriormente. Los datos (sin ningún tipo de identificaciones individuales) pueden ser presentados a revistas especializadas y otras publicaciones y se pueden presentar en un lugar público.

Si usted tiene preguntas adicionales sobre el programa KidQuest o las medidas de evaluación que serán usadas, por favor póngase en contacto con el director del proyecto o líder del proyecto KidQuest que aparecen a continuación.

Director del proyecto:
Linda Boeckner, PhD, RD
Líder del Programa FCS, Especialista del programa de Extensión de Nutrición
119B Ruth Leverton Hall
Departamento de Ciencias de la Nutrición y de la Salud
Universidad de Nebraska-Lincoln

Lincoln, NE 68583-0806
Teléfono: 402-472-7634 Fax 402-472-1587
Email: lboeckner1@unl.edu

Líder del proyecto:
Johnna Hall, MS, RD
Educadora de la Extensión

119H Ruth Leverton Hall
Departamento de Ciencias de la Nutrición y de la Salud
Extensión de la Universidad de Nebraska
Lincoln, NE 68583-0806
Teléfono: 402-472-3789 Fax 402-472-1587
Email: jhall21@unl.edu

Por favor, póngase en contacto con la Junta de Revisión Institucional de la Universidad de Nebraska- Lincoln en el (402) 472-6965 por los siguientes motivos:

- Si usted desea hablar con alguien que no sea del personal de investigación para obtener respuestas a preguntas sobre sus derechos como participante en una investigación
- Para expresar sus inquietudes o quejas sobre la investigación
- Aportar sobre el proceso de investigación
- En caso de que el personal del estudio no pudo ser localizado

Si por alguna razón usted **NO** desea que su niño participe, por favor complete y devuelva el formulario adjunto dentro de la primera semana de recibir esta carta

Gracias a usted y a su niño por la asistencia con este importante proyecto.

He leído la información acerca del programa KidQuest y el estudio de investigación siendo conducido por la Universidad de Nebraska – Lincoln. Por favor marque la caja de abajo **solo si usted NO** desea que su niño participe en la porción de investigación de este proyecto.

☐ Mi niño **no** tiene permiso para participar

_____	_____	_____
Nombre del estudiante	Escuela	Grado

_____	_____
Firma de padre o tutor	Fecha

Por favor asegúrese de que su niño devuelva este formulario al profesor SOLO si usted NO quiere que el/ella participe. También puede mandar el formulario por correo a la siguiente dirección:

Departamento de Ciencias de la Nutrición y de la Salud
Attn: Johnna Hall
110 Ruth Leverton Hall
Universidad de Nebraska-Lincoln
Lincoln, NE 68583-0806

APPENDIX J.

Youth Assent Form – KidQuest (English)

IRB# 20131113574EP
Date Approved: 07/09/2014
Valid Until: 11/04/2014

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Nutrition & Health Sciences

YOUTH ASSENT FORM

Effectiveness of the KidQuest Club in an In-School Setting

We would like for you to help us with a study. The project is called the KidQuest Club. We want to see if the KidQuest program is good at teaching you about good things to eat and exercise. If you want to help, you will take a survey two times, once before, and once after the KidQuest program. Each survey will take 15-20 minutes. The survey will be about eating and exercise. We will also show you some pictures and you can tell us which one looks like you. We will also have you do exercises that are similar to what you do in your PE class, like push-ups, curl-ups, trunk-lifts, and the PACER which is the test where you run from one cone to another to see how many laps you can do. Finally, we will ask you to allow us to measure your height and weight. All of these things will be done twice, once before the KidQuest program begins, and once six months later.

We want to do this study so that we can improve the activities that you learn from. Your individual responses and results from the other tests will be private. We will not be sharing your individual information with anyone and none of your information will be connected to your name.

Your parents will also be asked to give their permission for you to take part in this study. Please talk this over with your parents before you decide that you want to do this. Although you will still do the exercises for PE testing, you do not have to be in this study if you do not want to. If you decide you do not want to, you can stop at any time by just telling one of us.

If you have any questions at any time, please ask one of the researchers.

Signature of Subject Date

Signature of Investigator Date

INVESTIGATOR
Linda Boeckner, PhD, RD
Phone: 402-472-7634

APPENDIX K.

District Letter of Support – KidQuest

IRB# 20131113574EP
Date Approved: 07/22/2014
Valid Until: 11/04/2014

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Nutrition & Health Sciences

Dear District Official:

We are excited to announce that your school has the opportunity to participate in an educational program called KidQuest (Fitness, Food, and Fun). The goals of the program are to increase physical activity patterns and improve overall eating behaviors. The program will be provided in 8 sessions which will be completed during the school day. In addition to the 8 lessons, 6 sessions will include data collection. Three of these sessions will be prior to the start of the KidQuest program, one will be immediately following the program, and the final two of the sessions will be six months after the initial assessments. Participation in KidQuest over the quarter will allow your students to learn more about nutrition and healthy food choices and ways to increase overall physical activity while having fun at the same time. Some of the nutrition topics will include the benefits of breakfast, smart snack and vending machine choices, and calcium intake. The physical activity sessions provided will introduce your students to fun ways that they can move every day in a short amount of time which still counts towards promoting overall health. Each session of KidQuest will last 30-40 minutes. The first and last two data collection sessions will each take 30 minutes while the second data collection will take approximately 10-15 minutes. The data collection will be done during PE class in accordance with the teacher's teaching and Presidential Fitness Testing schedule.

This letter is a consent request for your school to participate in the KidQuest research project developed by the University of Nebraska-Lincoln (UNL). The research project is designed to test the efficacy of KidQuest in the PE classroom setting in Nebraska.

We are requesting your permission to conduct the following evaluation which will be conducted before and after implementation of the program on two different groups, an intervention group and a delayed-intervention group. The intervention group will receive the KidQuest program immediately following the initial assessments while the delayed-intervention group will not receive the KidQuest program until they have completed both the initial, post, and 6 months assessments. Our research and evaluation methods have been approved by the University of Nebraska-Lincoln Human Subjects Research Review Board. Your students will be asked to do the following:

- Youth survey to assess eating and physical activity and other wellness related behaviors. A copy of this survey can be requested by contacting the project director listed on this consent form.
- Children's Body Image Scale (CBIS) to assess perceived body image. The child points to the picture they feel best represents their body image status. A link to the CBIS pictures can be found at: http://adc.bmj.com/content/94/12/944.full.
- Weight, height, and body mass index. Measurements will be done in a private setting with a lightweight shirt and shorts.
- Students will be asked to participate in the President's Physical Fitness Assessment Challenge (FITNESSGRAM), during their scheduled Physical Education class, to determine overall physical fitness.

A parental notification will be sent home to each parent explaining the program in full. This notification will also explain the opt out process if they choose for their child not be a part of the research portion of the program. Youth assent will also be collected before initiation of the research program.

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

If you have additional questions about the KidQuest program or the evaluation measures that will be used, please contact the Project Director or KidQuest Project Leader listed below.

Project Director:
Linda Boeckner, PhD, RD
FCS Program Leader, Extension Nutrition Specialist
119B Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska-Lincoln
Lincoln, NE 68583-0806
Telephone: 402-472-7634 Fax 402-472-1587
Email: lboeckner1@unl.edu

Project Leader:
Johnna Hall, MS, RD
Extension Educator
119H Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska Extension
Lincoln, NE 68583-0806
Telephone: 402-472-3789 Fax 402-472-1587
Email: jhall21@unl.edu

If you have any questions about the KidQuest program or associated research project or would like to voice concerns or complaints about the research, please contact the Project Director or Leader at any time.

Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 for the following reasons:

- You wish to talk to someone other than the research staff to obtain answers to questions about your rights as a research participant.
- To voice concerns or complaints about the research.
- To provide input concerning the research process.
- In the event the study staff could not be reached.

Participation in this study is voluntary. You are free to decide not to enroll your school in this study. You can refuse to participate or withdraw your school at any time without harming their or your relationship with the researchers or the University Nebraska-Lincoln, (or other institutions or organizations), or in any other way receive penalty or loss of benefits to which you are otherwise entitled.

If you agree and understand the information provided, please indicate the level of consent you require for your school by placing an 'X' next to the appropriate level and sign below:

_____ Parent Notification with opt out option
_____ Parent Informed Consent

District Official Signature:_____**Date:**_____
Title: _____
District: _____

APPENDIX L.

Administrator Letter of Support – KidQuest

IRB# 20131113574EP
Date Approved: 07/22/2014
Valid Until: 11/04/2014

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Nutrition & Health Sciences

Dear Administrator:

We are excited to announce that your school has the opportunity to participate in an educational program called KidQuest (Fitness, Food, and Fun). The goals of the program are to increase physical activity patterns and improve overall eating behaviors. The program will be provided in 8 sessions which will be completed during the school day. In addition to the 8 lessons, 6 sessions will include data collection. Three of these sessions will be prior to the start of the KidQuest program, one will be immediately following the program, and the final two of the sessions will be six months after the initial assessments. Participation in KidQuest over the quarter will allow your students to learn more about nutrition and healthy food choices and ways to increase overall physical activity while having fun at the same time. Some of the nutrition topics will include the benefits of breakfast, smart snack and vending machine choices, and calcium intake. The physical activity sessions provided will introduce your students to fun ways that they can move every day in a short amount of time which still counts towards promoting overall health. Each session of KidQuest will last 30-40 minutes. The first and last two data collection sessions will each take 30 minutes while the second data collection will take approximately 10-15 minutes. The data collection will be done during PE class in accordance with the teacher's teaching and Presidential Fitness Testing schedule.

This letter is a consent request for your school to participate in the KidQuest research project developed by the University of Nebraska-Lincoln (UNL). The research project is designed to test the efficacy of KidQuest in the PE classroom setting in Nebraska.

We are requesting your permission to conduct the following evaluation which will be conducted before and after implementation of the program on two different groups, an intervention group and a delayed-intervention group. The intervention group will receive the KidQuest program immediately following the initial assessments while the delayed-intervention group will not receive the KidQuest program until they have completed both the initial, post, and 6 months assessments. Our research and evaluation methods have been approved by the University of Nebraska-Lincoln Human Subjects Research Review Board. Your students will be asked to do the following:

- Youth survey to assess eating and physical activity and other wellness related behaviors. A copy of this survey can be requested by contacting the project director listed on this consent form.
- Children's Body Image Scale (CBIS) to assess perceived body image. The child points to the picture they feel best represents their body image status. A link to the CBIS pictures can be found at: http://adc.bmj.com/content/94/12/944.full.
- Weight, height, and body mass index. Measurements will be done in a private setting with a lightweight shirt and shorts.
- Students will be asked to participate in the President's Physical Fitness Assessment Challenge (FITNESSGRAM), during their scheduled Physical Education class, to determine overall physical fitness.

A parental notification will be sent home to each parent explaining the program in full. This notification will also explain the opt out process if they choose for their child not be a part of the research portion of the program. Youth assent will also be collected before initiation of the research program.

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

If you have additional questions about the KidQuest program or the evaluation measures that will be used, please contact the Project Director or KidQuest Project Leader listed below.

Project Director:
Linda Boeckner, PhD, RD
FCS Program Leader, Extension Nutrition Specialist
119B Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska-Lincoln
Lincoln, NE 68583-0806
Telephone: 402-472-7634 Fax 402-472-1587
Email: lboeckner1@unl.edu

Project Leader:
Johnna Hall, MS, RD
Extension Educator
119H Ruth Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska Extension
Lincoln, NE 68583-0806
Telephone: 402-472-3789 Fax 402-472-1587
Email: jhall21@unl.edu

If you have any questions about the KidQuest program or associated research project or would like to voice concerns or complaints about the research, please contact the Project Director or Leader at any time.

Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 for the following reasons:

- You wish to talk to someone other than the research staff to obtain answers to questions about your rights as a research participant.
- To voice concerns or complaints about the research.
- To provide input concerning the research process.
- In the event the study staff could not be reached.

Participation in this study is voluntary. You are free to decide not to enroll your school in this study. You can refuse to participate or withdraw your school at any time without harming their or your relationship with the researchers or the University Nebraska-Lincoln, (or other institutions or organizations), or in any other way receive penalty or loss of benefits to which you are otherwise entitled.

If you agree and understand the information provided, please indicate the level of consent you require for your school by placing an 'X' next to the appropriate level and sign below:

_____ Parent Notification with opt out option
_____ Parent Informed Consent

School Administrator Signature:_____**Date:**_____
Title: _____
School and District: _____

Appendix M.

Teacher Letter of Support – KidQuest

IRB# 20131113574EP
Date Approved: 07/09/2014
Valid Until: 11/04/2014

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Nutrition & Health Sciences

Dear Teacher:

Thank you for being willing to have your classroom to be a part of the KidQuest program. We are excited to partner with you in educating your students and nutrition and physical activity.

Within the next six months your students will be a part of the KidQuest program. We are asking that your students participate in a few different assessments that will assist us in determining the efficacy of the KidQuest program on nutrition and physical activity knowledge and behaviors and fitness and physical assessments. The assessments your students will complete in your class will include a pre and post survey related to the KidQuest program on nutrition and physical activity knowledge and behaviors and fitness and physical assessments. We hope this information will help us establish the most effective program at teaching middle school aged students about nutrition and physical activity. We will be asking for your assistance with these assessments prior to the start of KidQuest at your school, after the first 8 weeks of the KidQuest program, and 6 months after the initial assessments were completed. The assessments will take approximately 90 minutes both initially and at the six month assessment time. In order for your students to participate in the research portion of the KidQuest program we need both their permission and their parent's permission.

We are asking for your help in collecting the proper permission. We are asking for your help with the following:

- Use the provided envelope to collect (and keep in a secure location) any consent forms that are returned from parents of your students. Informed consent will need to be obtained in order for each student's assessment data to be used for research purposes. An informed consent form will be sent home explaining the program and associated research. In order for their child to participate in the research study, they will need to sign the consent form and return it. If they choose for their child not to participate in the research study, their child will still receive the KidQuest lessons within the next six months, and their assessment results will only be used for grant reporting purposes. We will collect this from you when the program begins.

Thank you again for allowing us to be a part of your class. We hope both you and your students enjoy the KidQuest program.

PRIMARY INVESTIGATOR
Linda Boeckner, PhD, RD
Phone: 402-472-7634