

Prevention of Childhood Obesity through an Increase in Energy Expenditure

Effect of a motivational lecture to children about the benefits of exercise on their time spent doing sedentary and physical weekly activities

Tag Words: childhood obesity, motivational lecture, exercise, sedentary activity, children, physical activity, energy expenditure, obesity, prevention, increased technology, physical education, low income, benefits of exercise

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Summary

Physical education and activity have significantly declined in school systems for the younger generation, and thus childhood obesity has become a greater problem. By showing children fun and easy ways to incorporate exercise into their everyday life, they may become healthier, and continue these good habits in the future. To make children, and the younger generations, more informed we “taught” them fun exercises and showed them how what they are already doing everyday is good for them. Their parents recorded their daily exercise versus their sedentary activity for a week, thus providing us with data on whether this “class” was effective or not. The children, who participated, are members of an afterschool program at the YMCA that is not fitness oriented. Therefore, the results were not skewed.

http://www.youtube.com/my_videos_edit?ns=1&video_id=KjaquO9XEVI

Problem

Childhood obesity has become a growing epidemic throughout the United States in the past decade. Declining physical education, increased reliance on technology for entertainment, lower incomes due to the economic crisis and in general, a more fast paced, fast food lifestyle is causing this rapid weight increase in the younger generation. Current solutions include children’s fitness classes in schools and fitness locales. Additionally, parents should instill healthy habits in their children from a young age, which is only possible if parents take the initiative to become educated themselves in proper nutrition and physical fitness.

A Decline in Physical Education in Schools

(AD) Over the past decade, childhood obesity has increased drastically in the United States, and this may be, in part, due to the fact that physical education has been significantly reduced, or

in some cases eliminated, from schools around the country due to budget constraints and worrisome academic scores (Active Education, 2007). Schools, however, are the most ideal places to teach children about healthy and active lifestyles, for most children are in school five days a week for approximately 10 months each year for at least twelve years of their lives. Unfortunately, children get little to no regular exercise in school (Active Education). Today, only 3.8 % of elementary schools provide daily physical education. In high schools this number drops to a staggering 2.1%. In total, 22% of schools around the country do not require students to take physical education at all (Fainaru-Wada, 2012). The Surgeon General recommends that children participate in about an hour of physical education almost daily, yet most schools only provide a physical education program once a week, and most often, this program is only executed for about a third of the year, to then be replaced with other specialty classes like art or music. Since the 1970s, childhood obesity has nearly quadrupled from 4% to 17% in 2006 (Fainaru-Wada, 2012).

In addition to physical education programs being cut due to an expanding curriculum and budgetary constraints, recess is also on the verge of being removed from schools. “An estimated 40 percent of U.S. school districts either have eliminated recess or are considering eliminating it” (Villaire, 2012). School boards fear that time taken for physical activity is decreasing academic achievement. However, studies show otherwise. First and foremost, numerous studies have proven that physical education does not harm academic performance. In some cases, physical education has even been shown to improve academic achievement in numerous students. This improvement is a result of “enhanced concentration skills and classroom behavior,” which studies show are direct results of having small breaks throughout the school day for physical activity (Active Education, 2007).

Finally, though schools are highly responsible for the more sedentary lifestyle of students, parents are also contributing to the pandemic. “By not strictly limiting TV watching, computer and video game use, and consumption of fast food, and not requiring their children to walk more, play outdoors, and participate in organized physical activities, more kids are putting on more pounds, and in many cases, setting themselves up for the risky medical problems that accompany obesity” (Villaire, 2012). Frequent exercise will help children avoid obesity; yet schools and parents are making it very difficult for children to get the proper amount of exercise required daily to have healthy bones, muscles, joints, and blood pressure long into their adult lives.

Changes in Eating Habits from an Early Age

(AD) Children must eat healthy, in addition to daily physical activity, in order to maintain proper body weight and fat. If they do not adopt good habits, their body fat percentage will increase, thus increasing their risk for other health concerns, and their likelihood of becoming obese adults (Villaire, 2012). Today, 75% of Americans do not eat fruit, more than 50% do not consume the required amount of vegetables, and 64% eat too much saturated fat (Marcera, 2010). Good habits, therefore, must be implemented early. Breakfast is the most important meal of the day because it “kickstarts the body’s metabolism,” which is responsible for helping the body burn calories. Breakfasts rich in whole grains, fiber, and protein can help increase a child’s concentration and memory (kidshealth.org), thus increasing a child’s academic achievement, without eliminating physical education and adding onto the curriculum.

Carbohydrates are not responsible for the high prevalence of obesity in the country. Consuming carbohydrates such as whole grain cereals, brown rice, whole grain breads, fruits, and vegetables is completely acceptable and necessary. For children over the age of 2, about 50% of their calories should be consumed from good carbohydrates like those just listed (kidshealth.org). Additionally, parents should always incorporate vegetables into the family's meals and decrease the amount of fat prevalent. No child should be forced to "clean their plates" and food should not be used as a form of bribery. This establishes an improper view of food for children and can result in unhealthy eating behaviors later in life that often contribute to obesity (kidshealth.org).

Eating healthy and physical activity are the only ways to maintain a healthy weight. The sooner children learn how to incorporate both into their daily routine, the sooner they will be on the right track to a healthy lifestyle through adulthood. Nemours Health and Prevention Services (NHPS) has summarized a healthy lifestyle in four points, known as 5-2-1-Almost None. These points include: "eating 5 or more servings of fruits and vegetables daily, limiting screen time to 2 hours (or less) a day, getting 1 or more hours of physical activity every day, and drinking almost no sugary beverages" (kidshealth.org). Eating healthy is the first step to a healthier life and the first lady, Michele Obama, has provided children and parents the opportunity to learn more about how to live more fulfilled and health-conscious lifestyles with the USDA run website, choosemyplate.gov. The sooner children put their technological skills to good use and access this website, the sooner they can teach themselves how to be healthy, especially since schools have limited the health and physical education they provide to their students.

A Rise in Technology Accompanies a Fall in Physical Activity

(DP) Obesity is a growing epidemic within the United States, especially among the youth. The onset over the last decade or so is complicated because its cause is not fully understood since it is due to a combination of many factors. It is thought that the advancement in technology is largely to blame for the increase in childhood obesity. The main form of technology that comes to mind when discussing childhood obesity is most often television and how infiltrated it has become into the American culture. It is not difficult to see that children and families overall watch more television today than in the past. Technology also encompasses video games, which has become all the rage for recent generations. Many children spend hours playing video games on not only the television but on the computer as well. Advancement in the Internet and social media such as facebook, skype, etc. also increases the amount of time that many individuals spend on the computer. Lastly, the increase in use of cell phones can also be to blame in the onset of childhood obesity. Most children these days have a cell phone and are constantly texting and on their phones instead of taking part in other meaningful activities. A combination of all these technological advances have aided in the growth of the obesity epidemic, especially among the youth of America.

One of the major factors thought to contribute to the obesity epidemic is the increased time spent watching television. "Children in the United States spend, on average, as much time watching television in the course of a year as they do attending school" (Dietz 807). Clearly, this is a significant amount of television being watched. This is affecting in increase in obesity

among children in a few different ways. The amount of time being spent watching television is detracting from the time being spent doing physical activity. It is also affecting the amount children eat during the time they watch television, as well as the type of food they eat. Lastly, the amount of energy used to watch television is very minimal, resulting in even lower energy expenditure.

The most obvious result of the effects of television on obesity is the decreased energy expenditure. "Watching television requires no energy in excess of resting metabolic rates, and it may reduce the time spent in more energy-expensive states" (Dietz 807). This means that by watching television, there is less time to do physical activity including sports, playing outside with friends, etc. The increase in the sedentary lifestyle is preventing children from exercising to meet the requirements necessary to maintain a healthy lifestyle, resulting in weight gain and adding to the increase in childhood obesity.

Another reason that television negatively affects the obesity epidemic in children is that it serves as a distraction while eating as well as promotes bad eating habits. "The foods most heavily advertised on children's television, and more likely to be consumed by children watching increased amounts of television, are calorically dense foods such as sugared breakfast cereals, candy bars, cakes, cookies, and carbonated beverages" (Dietz 807). It turns out that the prevalence of these advertisements not only correlates with snacking in between meals, but it also provokes children to coerce their parents into buying them these unhealthy foods. Due to the increase in food consumption through snacking and the consumption of calorically dense and unhealthy food, children are over consuming calories. This in combination with the decrease in energy expenditure through exercise lead to an increase in weight gains in children and in turn obesity.

Many studies have been done to test this theory and various conclusions have been reached. According to Dietz, "children who watched more television experienced a greater prevalence of obesity or superobesity than children who watching less television" (808). It is evident that the decrease in energy expenditure, increase in poor food choices, and in increased in-between meal snacking has aided in the increase in obesity among children. It is not the sole contributor, but it plays a significant role in the sedentary lifestyle plaguing the younger generations today.

Another major contributor to the increase in childhood obesity is the numerous hours spent playing video games by children. It is thought to induce the "couch potato" hypothesis, which states that "time spent with television and video games is thought to be negatively related to time spend in more energy expending activities and positively related to the time spent in sedentary activities" (Vandewater 72). Video games have similar effects as that of watching television; however, when combined with television, they only decrease the level of activity in children and increase the sedentary lifestyle.

There have been quite a few studies done on video game use in children and adolescents and the affects on adiposity stores. Some results say there is little affect, while others say there is a clear trend in increased video game use and increased obesity. According to Vandewater, "there is a curvilinear relationship between electronic game use and BMI indicating that children

with higher weight status played moderate amounts of electronic games, while children with lower weight status played very little electronic games” (79). This shows that video games show somewhat of a correlation with weight gain in children. This is again mainly due to the decrease in energy expenditure and an increase in a sedentary lifestyle.

Computers are also another advancement in technology that has become very popular. It also increases the sedentary lifestyle and aids in decreasing in energy expenditure due to less participation in physical activity. Studies have shown that “the proportion overweight among adolescents owning a computer without an Internet connection was greater than the proportion among those without a computer” (Lajunen 2458). Therefore, having a computer versus not having a computer at all, whether there is an Internet connection or not, adds to the sedentary lifestyle causing an increase in obesity. This could be attributed to the amount of time people spend on facebook and other social media sites. It can also be attributed to the use of skype instead of meeting up with a friend or shopping online instead of going to the store and buying products. All these situations take away from physical activity and promote a couch potato lifestyle.

The last form of technology that has become prominent among the youth of America is the use of cell phones. Children and adolescents are always constantly on their phones today, texting or surfing the Internet. In fact, “ there was a positive linear trend between the amount of a cell phone bill and BMI when a cell phone bill was used” (Lajunen 2458). This adds to the sedentary lifestyle because text message or e-mail from the phone or even computer replaces a visit to see someone or go to the grocery store. This leads to a decrease in daily physical activity, which can lead to an increase in weight gain and add to the obesity epidemic.

Benefits of Exercise For Overall Health

(DP)

By incorporating exercise into one’s daily routine, it is not only effective in reducing one’s weight and preventing obesity, but it also aids in minimizing risk of diseases associated with obesity. The following diseases become more prominent in individuals living sedentary lifestyles:

Exercise can help reduce risks for cardiovascular disease, one of the leading causes of death. Cardiovascular disease involves the heart and arteries and the build up of plaque within them. This causes high blood pressure, also known as hypertension. Eating high fat diets, which are filled with saturated fat and cholesterol, can also cause it. By eating better and exercising, it is possible to reduce this type of fat within the arteries. It is also possible to reduce some of the fat that builds on the heart itself. Therefore, exercise can be of great benefit in helping prevent this disease, which has increasing risk with weight gain.

Another disease associated with obesity and a sedentary lifestyle is the onset of Metabolic Syndrome X. Metabolic Syndrome X is composed of many symptoms that could progress to more serious condition. It is characterized by high blood pressure, which could result cardiovascular disease. This condition is also characterized by high blood sugar, high levels of triglycerides, and low HDL, which is a good fat within our bodies. These symptoms could lead

to diabetes, which is prevalent among the obese. By exercising, all of these symptoms along with obesity can be reduced, preventing the onset of Metabolic Syndrome X.

Exercise is also important in helping reduce stress as well as improving sleep. Firstly, exercise can help relieve some of the frustrations one may encounter as well as serve as a distraction from them. However biologically, it is beneficial because it helps reduce cortisol, which is released in response to stress, while increasing endorphins, which causes a sensation of happiness. By decreasing the amount of stress experienced by an individual, this can also aid in improving their quality of sleep. Although this may not be the only reason for improving quality of sleep, it can most definitely contribute. As a result, exercise can help to both reduce stress as well as improve sleep quality.

(DC))

Exercise has numerous benefits that affect people of all ages. Not only does it help in losing weight, but there are many physiological benefits associated with working out. To begin, exercise is one of the best things for the cardiorespiratory system (Gladwin 2010). Aerobic training has the ability to increase stroke volume in the heart. This means that a fit individual will pump more blood per heartbeat which results in a lower heart rate. An increase in stroke volume correlates with an increase in cardiac output. Cardiac output is the amount of blood pumped by the heart per minute. The quicker the blood is pumped from the heart, the more oxygen and nutrients can be delivered to the rest of the body. Exercise also causes a physiological adaptation of the circulatory system's ability to regulate the direction of blood flow. During exercise, blood flow is diverted away from tissues that are less metabolically active and is directed toward tissues needed for the exercise (Gladwin 2010). In order to do this, blood vessels must constrict or dilate in order to redistribute the blood and move it to where it is needed. The more you exercise, the better your body will be able to distribute the blood to the necessary locations. Oxygen extraction is increased due to this vasodilation and vasoconstriction. More oxygen is able to be extracted at the capillary level, allowing better utilization of one of the most important elements the body needs to survive. Aerobic fitness has also been found to be beneficial by increasing respiratory rate. Respiratory rate is one of the critical factors of oxygen delivery throughout the body. The more oxygen that can be delivered, the less work your body needs to do to ensure the nutrients it needs.

Not only are there physiological benefits to exercise, there are also many psychological benefits as well. Exercise has the ability to relieve ones anxiety (Gladwin 2010). Anxiety is referred to as having feelings of tension and apprehension, and can have the ability to affect a person's daily life. Research has shown that after working out, anxious feelings can be reduced for hours after. It has also been shown that a regular exercise routine has beneficial effects for those suffering from anxiety. Even those predisposed to this psychological problem are able to reduce the effects. While it has not been determined exactly what type of exercise is best, aerobic exercise has been shown to have a positive outcome.

Improving one's self-esteem is another psychological benefit of exercise. Many people who suffer from low self-esteem do not feel self-worth and competency. Exercise is able to change this through setting achievable goals, experiencing success, and feeling physically fit (Gladwin 2010). An exercise routine must include workouts that are at a level of difficulty that

the individual has the ability to master. There has been much research done on exercise and self-esteem, and none have reported any negative effects.

Aerobic exercise also has the ability to improve one's cognitive function, energy, and mood. It is found that exercise can improve memory, increase intelligence, and sharpen mental acuity (Gladwin 2010). Studies have also shown an increase in reactions to timed tasks and increased mathematical performance. Energy levels are higher after simple bouts of exercise such as a ten minute walk which helps lead to positive moods because many experience tranquility, happiness, pleasure, or fun while doing such activities, especially when it includes social interactions. People are more likely to experience positive feelings with regular, socialized exercise.

Regular weight-bearing exercise has many advantages, such as decreasing the risk of acquiring osteoporosis at a later age. Bones thrive on pressure being put on them, making them stronger and less likely to break once you have a drop in estrogen or testosterone. Osteoporosis affects 1 in 5 women after the age of 50 and is caused by a drop in bone mineral content (Gladwin 2010). While young, it is recommended to take in calcium and vitamin D daily to increase bone strength which can then be maintained through regular weight-bearing exercise as one ages. This will decrease the likelihood of immobility and/or bone fracture. Exercise proves to assist in maintaining an independent lifestyle and overall higher quality of life.

The obesity epidemic in the United States has caused an increase in the number of people with Type 2 Diabetes Mellitus. Type 2 Diabetes Mellitus is characterized by insulin resistance, or the body's inability to sufficiently use insulin. Insulin is needed for the body to take in glucose and use it as energy when necessary. Complications that may form due to Type 2 Diabetes include eye problems, less control over blood pressure and cholesterol which can lead to heart attack or stroke, sores and infections of the skin, and kidney problems because of high blood sugars. The easiest way to treat and prevent Type 2 Diabetes is by maintaining a healthy weight, or losing excess weight. Type 2 Diabetes may be reversed through exercise, allowing one to eradicate any problems that may occur due to this disease.

A precursor to Type 2 Diabetes is called Metabolic Syndrome. Metabolic Syndrome has many signs and symptoms similar to those of diabetes, including large waist circumference (greater than 40 inches for men and greater than 35 inches for women), low HDL cholesterol, blood pressure equal to or greater than 130/85mmHg, fasting blood sugar higher than 100 mg/dl, or triglycerides higher than 150 mg/dl (Gladwin 2010). Once again, the best treatment for Metabolic Syndrome is losing weight and exercising at least five days a week at a moderate intensity. Due to the increase in obesity throughout the United States, the number of cases of Metabolic Syndrome is dramatically increasing each year. The more you exercise, the less likely you will develop metabolic syndrome and will be able to lead a healthier life.

Effect of Low Income on Family Health

(DC)

Although obesity affects many people, the majority of those who are obese come from low-income families. A main reason for this is unhealthy food environments. It has been found that in urban settings, there are higher rates of obesity in the low-income neighborhoods as

compared to the more affluent neighborhoods. Studies have shown that New York City's wealthiest neighborhood, the Upper East Side, had nine percent obesity prevalence in 2006 as compared to its lowest income neighborhoods, Harlem and Brooklyn, which had 21-30% obesity prevalence (Gordon et al 2011). It was found that the lower income neighborhoods had limited opportunities to purchase healthy food due to a "food desert," or area in which fast food restaurants dominate, making it harder for low-income residents to access healthy and affordable food. Food deserts are identified by the lack of super markets and fruit and vegetable markets, store front advertisements (food, alcoholic and nonalcoholic beverages, or cigarette ads), and specific items that are available in existing markets (Gordon et al 2011). These deserts correlate with areas that have the lowest median household income.

With this being said, established low-income areas are unable to supply healthy foods as compared to wealthy areas due to the inability to afford such food. Fast food is much more affordable than fruits and vegetables based on the ability of one to be satiated. Through collected data, it is found that Americans fruit and vegetable consumption levels are associated with their prices (Gordon et al 2011). The higher the price of fruits and vegetables becomes, the lower they are consumed (food prices and fruit and vegetable consumption among young American adults). This means that in lower income neighborhoods, less fruits and vegetable are being consumed causing people that live in this area to gain weight and become obese.

A second cause of obesity in low-income environments is based on mother's perceptions of weight, diet, and health. As larger body sizes become the norm, many people are unaware of their child's weight status because it is similar to those around them. Through the National Health and Nutrition Examination Survey it is found that 60% of parents underestimated the size of their child and only 26% of parents with overweight children were concerned with their child's weight status (Dammann et al 2011). These are alarming amounts of people who are unaware of their child's size, allowing them to continue to gain weight and not be healthy. Not only were there misperceptions in weight, there were also misperceptions in diets. Out of all the mothers of the 257 participants, only four felt their diets would be considered excellent, yet 15 thought their child's diet was (Dammann et al 2011). Misperceptions have been found common among men, minority groups, and those with low education levels. The lower the income, the lower the education level, the more likely one is to have misperceptions of their child's and their own body weight.

Increased intake of soda and other nutrient-poor, energy-dense beverages has also been shown to be a cause of obesity for lower income families. It is currently estimated that Americans consume an average of 400 kcal per day of these beverages (Pinnard 2011). Also, it was reported that parents and children consume only the minimal recommendation of water intake per day. The exchange of drinking more energy-dense, nutrient-poor beverages instead of healthy choices such as water, 100% fruit juice, and low-fat milk correlates with the obesity epidemic due to the "empty calories" taken in that have no nutritional value. Factors such as this are learned at home through parents. Parents must make a switch to healthier options to educate their children and teach them simple ways to reduce their caloric intake.

The Mexican American community is the most rapidly growing ethnic group in the United States, and also the most obese. One in four Mexican-American children ages 6-19 years

and 14% of infants and toddlers are classified as overweight (Johnson 2008). This community has also been found to be of lower-income which is reflected in their food choices. There are five common themes among this community, causing many of them to be obese. The first theme is “a chubby baby is a healthy baby.” Many in the community feel when the words such as “chubby” or “gordito” are used to describe their baby, it is a compliment of good health and good parenting (Johnson 2008). Parents are proud of their chubby babies because of their culture, which is instead setting their children up for many health risks at a later age.

A second theme in the Mexican American community is that complementary foods are introduced into the diet earlier than when recommended (Johnson 2008.). It is recommended that complementary foods be introduced at the age of six months, but was found these foods, especially cereal, was introduced within the first month. This may be due to the cultural tradition which emphasizes eating with the family or making children grow faster.

Extended family influences on feeding practices is the third theme linked to childhood obesity in the Mexican American community. Grandmothers have the greatest influence on making mothers feel pressured to feed their infants due to family tradition and their ability to raise their own children. Family members are also used as a source of childcare, giving them the power to feed the child any type of food without the mother’s approval. Family plays a large role on overfeeding infants which must be monitored to keep them at a healthy weight. Mothers in the Mexican American community tend to offer high calorie, low nutrient-dense food choices to their children. Such foods include chips and candy which are convenient and inexpensive. Food is also used as a way to promote good behavior and convey love and affection, and because nutrient-poor foods are cheap, it is much more affordable for these families to buy more of such foods instead of healthier choices. Since food is used as a reward, children are more likely to over eat unhealthy foods and under eat foods with nutritional value.

The last theme known in this community includes delayed weaning from the bottle. This delay promotes over-consumption of drinks such as soda, tea, and flavored-milk for children up to four years of age which causes an increase in calorie consumption that is not necessary for their growth and development. Parents may be unaware of suggested intakes of different beverages for infants which can cause their child to become obese.

Hypothesis

By showing children at a young age that exercising can be fun and easy, they are more likely to participate in such activities to lead a healthier life and potentially continue to keep up this active lifestyle into adulthood. This could result in a decrease in childhood obesity and a healthier population overall.

Execution

Children learn best by example; therefore, it is important to test the efficacy of a presentation and activity period on children who lead a highly sedentary lifestyle. This research was conducted quantitatively. Half of the individuals received a motivational presentation on fun ways to incorporate exercise into their daily routines. The children were not being taught a set

routine, but rather given ideas and examples of what fun activities are also good physical exercises. Parents then filled out a survey regarding the hours their child spent doing active and sedentary activities. These surveys were anonymous and upon return, this quantitative data was then analyzed statistically. We were interested in learning whether children are more inclined to engage in less sedentary activities after listening to a presentation on fun ways to exercise while watching television and such.

Parents of children that attend a YMCA after-school program were asked to complete a survey regarding their children’s exercise for over a period of 7 days. They were asked to record what exercises their children completed and how long they spent doing sedentary activities in an anonymous survey. Approximately one-half of 40-60 children, ages 9-13, were chosen randomly from this program to listen to a one hour presentation on exercise activities. This was the experimental group. Parents of the other one half of the group, the control group, who did not attend the presentation, also completed the questionnaire. Once complete, the data was analyzed to determine the average time spent on sedentary versus physically engaging activities in children who received the motivational presentation compared to those who did not. Excel will be used to establish tables including the following data: parent participation, hours spent on physical activity, and hours spent on sedentary activity. This data will then be compared using the statistical and graphing function in Microsoft Excel.

The parents and their children are all connected to the same YMCA after school program. The program does not focus in any way on fitness. Their only common link is that they are members of the same after school program. Gender, race, sex, nationality, etc. were not considered and therefore the participants all had different cultural influences. Other than the variable, the one hour activity presentation, everyone was provided with the same information, nothing more and nothing less.

This study was conducted at the Raritan Valley YMCA located at 144 Tices Lane, East Brunswick, NJ.

Results (DC, AD, DP)

Though the sample size was very small, some benefit from the class was evident as is shown in Table 1. The children who participated in the class showed higher activity levels throughout the week on average, than children who were not present at the class, as Figure 1 also illustrates.

Total Hours of Exercise - 7 Day Period	
Kids w/ Program Active Exercise	Kids w/o Program Active Exercise
8.3	2
6.45	4.5
10.5	3
5.3	5
8	3

Table 1: This table gives the time in hours of each individual’s physical activity over the course of a seven day period. As is evident, the times of the kids with the active exercise program are greater than those without the program.

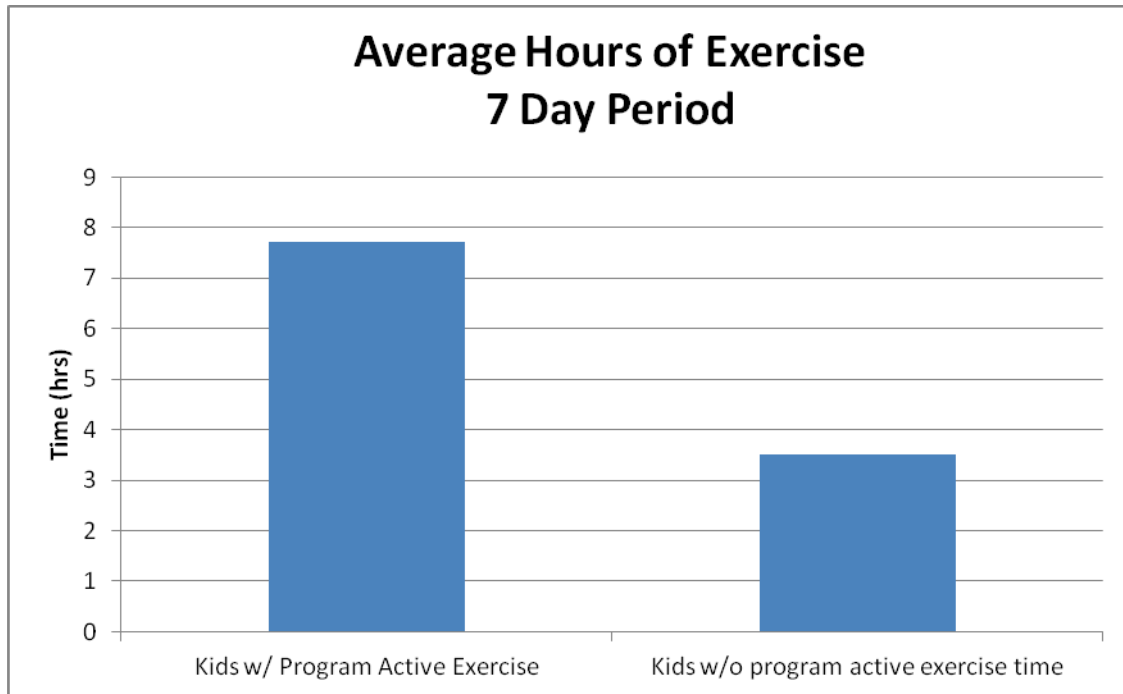


Figure 1: This table illustrates the average time of all the childrens' physical activity who did and did not participate in the class, where number of children who participated in the study is equal to n and n=10.

Furthermore, it is also important to note the amount of sedentary activitiy the children engaged in when analyzing the data. On average, the children spent an average of 134 minutes a day participating in sedentary activity, which is roughly a little more than two hours daily. The majority of this time was being spent watching television; however, part of the time was also spent playing video games and on the computer.

Discussion (DC, DP, AD)

The data we received is not statistically significant because the number of surveys returned after the seven day period was minimal (only 10 surveys returned) and a larger sample size is needed to make such a conclusion. Of the 10 surveys returned, 5 were from children who attended the class and 5 from children who did not. Though the results show some benefit from the class, due to the small sample size, the results are unusable. Furthermore, this accounts for why we did not provide more statistical analysis on the study we attempted to conduct. However, this does not mean that the presentation was a failure. On the contrary, it may have just been presented in the wrong setting. For instance, it would be optimal if this presentation was given in schools where more children of varying ages would be exposed to it. Additionally, the principles behind the presentation could be reinforced daily, or at the very least weekly, by teachers and other staff members. It is also safe to assume that children would be more inclined to listen to people they already know and see as authority figures rather than three college students with whom they have never interacted. Finally, there may be some bias in this data because the children who returned the surveys who did partake in the class may be more physically active in

general and thus wanted to share their achievements because children are known to want to broadcast their good qualities. Therefore, a different method of collecting data needs to be created to produce less bias.

An optimal way of teaching good healthy lifestyle habits would be by first teaching the parents. Children look up to their parents and expect their parents to lead by example. If a parent lives his/her own life on a couch constantly consuming greasy, low-nutrient food, they are more likely to feed their children in a similar way and thus spread their own unhealthy habits and lifestyle choices onto their children. A more effective study would be to gather data about how much parents exercise and what kind of food parents eat prior to a healthy living seminar/presentation. In this questionnaire they would be asked 1)how many hours a week they spend doing physical activity; 2)how many calories they consume in a week (especially where those calories are coming from); and 3)how many hours a week do their children exercise; 4) what kind of food do their children consume? These parents would then be given a class, similar to the one the children received in this study, which would teach them the essentials of healthy eating, how to calculate how many calories a day their bodies actually require, and practical exercise that they could actually incorporate into their daily lives. Then this same questionnaire would be provided to the parents to see how they were impacted by it. By targeting parents, maybe the concepts of healthy living will be passed down to children more readily than by a single presentation given by three college students with whom these children had no relationship.

In addition, it would be beneficial to test a level of internal control with the children. This would entail conducting some sort of experiment in which we are able to get an estimate of how much physical and sedentary activity is being done prior to the presentation of a motivational lecture. Although only half of the children would be receiving this presentation, it is still necessary to have some sort of prior rate of measure in which the results can be compared. This is the only way to truly test the effects of the motivational lecture. If the amount of energy expenditure increases and the rate of sedentary activity decreases in the children who receive the motivational lecture after it is given, then it can be concluded that our presentation was successful.

Because children look up to their parents and tend to mimic their habits, it is essential that they engage in making better lifestyle choices in order to instill the same habits within their children. It is truly the responsibility of the parents to make sure that their children maintain healthy lifestyles and do not end up morbidly obese. There are many ways this can be prevented. Parents can not only work at decreasing sedentary activity in their children's lives, but they can also increase the amount of physical activities they engage in as an entire family. By doing this, the parents are practicing what they preach, and the children are more likely to participate. Examples of this include going on family hiking trips, playing in the pool on a nice day, or even going on daily walks after dinner. Parents can also work to eat healthier as well as eat as a family. Instead of feeding their children unhealthy snacks, such as chips and popcorn, they can provide their children with more nutritious options. This would entail something along the lines of carrots and dips or apples and peanut butter. Most importantly, the parents can take a stand and go to greater lengths to help prevent their children from becoming obese. This entails going to schools, the town, or even the government to petition the decline in physical education

programs in schools. Children are the future, and it is up to the parents to make sure their kids are healthy and able to carry on today's traditions.

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Sent for Human Subjects Approval:

Prevention of Childhood Obesity through implementation of Exercise (Sp12 gp 13)

Student Principal Investigators: Alya Dukhan, Devon Craft, Dipal Patel

Objectives:

1. To determine the effectiveness of a motivational classroom presentation on the level of activity from the parent's perspective
2. To compare how much exercise is completed as compared to sedentary activities including watching television and playing video games in a sample group of 40-60 children.

Background and Rationale:

"A common denominator among people who successfully manage their weight and stay fit is that they exercise and make great nutritional choices as a matter of habit" (Huffington Post). If children are shown easy ways to stay active and exercise, there is a greater chance that they will exercise more and thus reduce their likelihood of becoming overweight. This could entail doing jumping jacks in between commercials, using resistance bands while watching television, playing freeze dance with parents and friends, etc..

Procedures:

Research Design:

This research will be conducted quantitatively. Half of the individuals will receive a motivational presentation on fun ways to incorporate exercise into their daily routines. The children are not being taught a set routine. Parents will be asked to fill out a survey regarding the hours their child spends doing active and sedentary activities. These surveys will be anonymous and upon return, this quantitative data will then be analyzed statistically. We are interested in learning whether children are more inclined to engage in less sedentary activities after listening to a presentation on fun ways to exercise while watching tv and such.

Sample:

Parents of children that attend a YMCA after school program will be chosen to interview. Approximately one-half of 40-60 children, ages 9-13, will be chosen randomly from this program to listen to a 1h presentation on exercise activities (experimental group). Parents of the other one half of the group (n=20-30) that do not attend the presentation (control group) will also be asked for an interview.

Measurement/Instrumentation:

Variables of interest include the effectiveness of the motivational presentation. We are interested to see if the children who receive the motivational presentation participate in more physical activity and less sedentary activity than those who did not receive it.

Study Site/Location of Procedure:

Raritan Valley YMCA, 144 Tices Lane, East Brunswick, NJ 08816

Detailed Study Procedures:

Over the period of seven days, parents will be asked to record what exercises their children have completed and how long they spent doing sedentary activities in an anonymous survey. Once complete, we will analyze the data to determine the average time spent on sedentary vs active activities in children who received the motivational presentation compared to those who did not.

Consent Procedures:

Participants will be read/asked to read this consent form, provided answers to any questions they may have about the study and offered the informational sheet below. All the participants will understand English and therefore no translators will be needed. The student researcher will say:

“This research study is being conducted as part of a class project at Rutgers University which has been approved by the Human Subjects Institutional Review Board under protocol # E12-342. The study involves only a interview/survey to be filled out that is both anonymous and confidential. Your participation in this study is strictly voluntary. The student researcher has been approved by the Rutgers Institutional Review Board to conduct the research. The consent will be read, and your questions answered. By giving verbal consent, you will be agreeing to participate in the study and that you are over the age of 18.”

Internal Validity:

The parents and their children are all connected to the same YMCA after school program. The program does not focus in any way on fitness. Their only common link is that they are members of the same after school program. Gender, race, sex, nationality, etc. were not considered and therefore the participants all have different cultural influences. Other than the variable, the 1 h activity presentation, everyone has the same information, nothing more and nothing less.

Data Analysis:

Excel will be used to establish tables including the following data: parent participation, hours spent on physical activity, and hours spent on sedentary activity. This data will then be compared using the statistical and graphing function in Microsoft Excel.

Bibliography:

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Informational sheet

Consent form

Title **Prevention of Childhood Obesity through Implementation of Exercise**

Student Investigators: Alya Dukhan, D.C. Craft, D.P. Patel with Julie M. Fagan, Ph.D.

INTRODUCTION

You are invited to voluntarily participate in a research study that will determine the effectiveness of a motivational classroom presentation on the level of activity of children from the parent's perspective. Additionally, it will compare how much exercise is completed as compared to sedentary activities including watching television and playing video games.

INFORMATION: Parents of children that participate in the classroom presentation will be asked to complete a survey that should take approximately 20-30 minutes to complete. The survey, will include the following questions: How many hours did your child participate in fitness activities? How many hours did your child participate in sedentary activity for the day? Parents of children who did not participate in this classroom presentation will also be asked to complete this survey .

BENEFITS: You will not receive any direct benefit for participating in this research. However, it is expected that the research will provide scientists with a better understanding of how to influence children to become more active and thus potentially help reduce the prevalence of childhood obesity.

RISKS: This study consists of only a parental interview/survey. There are no risks involved.

CONFIDENTIALITY: This research is completely anonymous. No information will be recorded that could identify you.

COMPENSATION: You will receive no monetary compensation for participating in this study.

RESEARCH QUESTIONS: If you have any questions regarding the study, you may contact Dr. Julie Fagan at 848-932-8354 or email her at Fagan@rci.rutgers.edu

SUBJECT RIGHTS: If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at: Rutgers University Institutional Review Board for the Protection of Human Subjects(Office of Research and Sponsored Programs(3 Rutgers Plaza(New Brunswick, NJ 08901-8559(Tel: 848 932 4058(Email: humansubjects@orsp.rutgers.edu

Survey

Monday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Tuesday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Wednesday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Thursday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Friday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Saturday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Sunday

How many hours did your child participate in fitness activities?
(i.e. walking, riding bike, dancing, jump rope, sports, etc) _____ hrs

Please specify activity:

How many hours did your child participate in sedentary activity for the day?
(i.e. computer, television, etc.) _____ hrs

Please specify activity:

Letters to the Editor

American Educator
555 New Jersey Avenue N.W.
Washington, DC
20001

Dear Annette Licitra,

This letter is in regards to your article “New Law Advances AFT Goals on Hunger and Nutrition.” While many see the Healthy, Hunger-Free Kids Act as being an outstanding starting point for ending childhood hunger and obesity, I feel that this only identifies childhood hunger, and only during the school day. Childhood obesity is a growing epidemic which needs more than healthy school lunches, but rather parental supervision to ensure a healthy lifestyle while at home. Without support of parents, children eating healthy for only five days of the week for (at most) two meals a day will not lower or maintain a child’s body weight.

Obesity can only be prevented through healthy eating habits and physical activity every day. Because this act only applies during school hours, one’s caloric intake may not be equal to or less than their energy expended, thus, keeping a child from maintaining a normal weight. This act needs to include the help of parents or guardians to take a stand and ensure healthy eating habits at home or whenever school is not in session. During the school year, there are many breaks such a winter break, spring break, and summer break. Summer is the longest (lasting near two months) in which a child has the ability to eat plenty of unhealthy food and partake in only sedentary activities. This will cause a great increase in their body weight even after eating healthy during school meals throughout the school year.

Parents should not depend on the government for their children to eat healthy and maintain a normal weight; rather, it should be one of their top priorities. They must do this themselves and take their own stand on their child’s health. Although this is a good starting point for childhood hunger, it needs much more, including the help of parents, to be able to prevent childhood obesity.

Sincerely,
Devon Craft

In response to article from the February 2011 issue titled “Should schools send notes home for students at risk of obesity?”

To: American Educator

From personal experience, I can safely say that a lot of the papers sent home when I was in school got lost en route from myself to my parents, and even from the post office to my parents because so much other paperwork is sent home constantly. The article titled "Should schools send notes home for students at risk of obesity?" is commentating on a very important issue at hand, but it is skirting around telling the school systems exactly how to fix it, and instead is trying to use a "note" as a band-aid, which I do not condone.

Over the past decade, obesity among children has increased significantly. This was not the result of one factor but rather a compilation of causes led to this outcome, including a more sedentary lifestyle, a more fast food driven way of life, the economic crisis, and increased focus on computers, television and video games for entertainment, just to name a few. Schools have not been of any help either. Today, according to an ESPN news report, 22% of schools around the country do not require students to take physical education at all. Though sending a note home informing parents of their child's above average weight may be a good first step, more needs to be done to help these children lead healthy lives and become healthy adults. Gary D. Askins makes a good point when he says that "we should be encouraging Americans to be physically active, [and] to eat well" because only those factors will truly help children either lose excess weight or stay healthy. Parents who have overweight children are more than likely aware of the fact that their children are on the heavy side. If they do not realize that, and are given a note saying so, this does not mean they will know how to fix the situation, making the note a moot point.

Additionally, weight should not be the main focus, but rather health should be, for "weight is not the most precise predictor of future health." Teachers, especially primary education teachers, see their students more than the parents do. If those teachers were to reinforce healthy habits on, at least, a weekly basis, children would be more educated about what it means to be healthy. If schools increase their physical education programs and make vending machine food and cafeteria food healthier, thus leading by example, then letters home would make sense because the school could then officially say that they are doing everything they can to make sure the child is healthy and now it is the parents' responsibility.

Though sending notes home is a good initiative, I would recommend sending a pamphlet on healthy living and possibly offer a few nightly seminars a year regarding eating healthy and physical activity too because school administrators, teachers, and nurses should not assume that parents are aware of what a healthy lifestyle entails. "Should schools send notes homes for students at of obesity?" is a good article, in the sense that it is bringing attention to the major problem at hand, but possibly publishing an article promoting in-school education and parent seminars may be a better idea, because a statement on a piece of paper sent home often gets lost in the chaos of the fast paced life Americans lead in general. If the school is going to go so far as to address a problem, and thus throw another wrench into the lives of these families, it is their responsibility to give the families a means of fixing the problem.

Sincerely,
Aleksandra Dukhan

To: American Educator,

I came across an article regarding “Linking Children’s Health to Education”, and it truly intrigued me. The overall health of children in society today has become an issue of great importance. Not only are there children and families starving, but there is also a growing obesity epidemic, both of which can hinder the health and well being of children and affect their overall ability to succeed in school and in life overall.

An author who really stuck out to me was Diane Perkins and the comments she made in regards to obesity. It is absolutely earth shattering to realize that childhood obesity in America has tripled over the past three decades. This often occurs in impoverished areas due to low-income households. It is expensive to eat healthy, and these families can often only afford to feed themselves and their children low quality foods that are cheap. This entails highly processed foods, fast food, etc. It is quite unfortunate, but efforts are being made to provide children with healthier food options in schools to help prevent the incline in childhood obesity rates.

Although there has been a large push nutritionally, many individuals seem to neglect the benefits exercise can have on the prevention of childhood obesity. Preventing weight gain is not all about the food one consumes; it also involves the amount of activity one part-takes in. The lower the energy expenditure of an individual, the lower their daily caloric consumption must be, which is something that seems to be neglected.

Lately there seems to have been a combination of factors that have aided in the decrease in energy expenditure of children in America, aiding in the obesity epidemic. This includes a decline in the gym programs of many school systems as well as an increase in the use of technology by children. It is not hard to see that children these days spend more time in front of the television, on their phone, or on the computer as opposed to playing in the park with friends or even joining recreational sports. In order to help the obesity epidemic, it is necessary to instill the values and benefits of incorporating exercise into our daily lives. By targeting the youth of America, it will hopefully not only help decrease the prevalence of childhood obesity, but obesity overall as these children move into adulthood. By instilling the need for adequate amounts of exercise, children may hold on to these values and maintain a healthy weight even as they age.

It is not an easy feat to accomplish such a task. This is mostly because children today are too caught up in the advancement of technology. It is difficult to divert their attention to something they view as a chore rather than something fun. However if exercise was incorporated into school systems with a more fun approach and parents were more willing to help the cause, it could be possible.

Morals and values start at home. By involving parents and families as a whole, it is easier to instill the benefits of exercise from a young age. If parents limit the amount of technology their children use as well as promote family exercise sessions, whether it be going for nightly walks, weekly hiking trips, etc., I think that children would find more joy in exercising. They see their parents as role models and by doing this as a family as opposed to alone, it may be more appealing for children. Even in school, teachers are still responsible for teaching their students good values. If all teachers outside of physical education as well as gym teachers incorporated fun ways to exercise in their lesson plans, children may be more likely to find exercise enjoyable. Teachers can construct learning games that involve learning the material as well as exercising, while gym teachers can incorporate the advances in technology for example with exercise to help appeal more to the newer generations. It is clear that nutrition alone is not solving the childhood obesity epidemic. Therefore, there needs to be a change. I truly believe that by involving family

and all teachers in school systems to support the benefit of exercising, it will help prevent the growing issue of obesity in the children of society today.

Sincerely,
Dipal Patel