

## English 420 Y

### **Childhood Obesity and Possible Solutions: Diet, Exercise, and Education**

**Team: Childhood Obesity**



Fig.1 A graphic depicting the value of obesity prevention. ("Obesity Prevention").

## Executive Summary

As more children become overweight, the childhood obesity rates have been rising over the past few decades. These rising rates are alarming because there are many associated risks that come with being overweight. Being overweight is linked with both physical and mental health concerns. Some things associated with physical concerns are diabetes and other diseases. Mental health concerns include sadness, frustration, loneliness, and more. Everyone has different plans they believe could fix this problem, the issue is that not all of these plans will work.

The first solution is to increase education about healthy eating. Teaching children about healthy eating early on, can greatly affect them in the long run. If children are taught correctly about portion sizing and in an environment with healthy foods, then healthy eating can come easy. Children should be taught that there are the five main food groups and how much food from each food group they should be eating in one day. Children will learn by watching what their parents eat. If a child sees their parent always snacking on junk food, then they are more likely to do so themselves. So setting a good example for children can be beneficial.

The second solution is to reduce sedentary time in children. Sedentary time is the time that children spend either lying or sitting and exerting little energy. The first method to reduce sedentary time is to create a plan and set goals. By setting goals, children will have the motivation to complete them. It is useful if the parent helps them along the way because they may not know how to set a good goal on their own. The other method to reduce the sedentary time in kid's days is to reduce screen time. Screen time can be anything from watching TV to playing a video game. By reducing this time, then that will give children more time to be active.

The third solution is to increase education about physical exercise. Many children know that physical exercise is good for them, but they do not necessarily know why. One method to educate the children is to first educate the parents. If the parents do not understand why their kids should exercise, then the child won't either. Parents could be educated through school programs or by reading newsletters. After the parents are educated, the children need to be educated. One way that many schools implement this education is through a P.E. class. This class gives the kids ideas of physical activity they can do by themselves at home and can be very beneficial.

While no one of these solutions is perfect and guaranteed to work every time, they all have their success stories. The more serious a child and a parent takes these solutions though, the more likely they are to work for them. If more than one of these solutions are taken advantage of then the possibilities are even higher. In an issue like this though, it takes more than just the child being involved. The parents need to be involved to help their kids along the way.

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## **Introduction**

Childhood obesity rates have continued to rise over the past few decades. This is raising concern because of the long term effects that are associated with being overweight as a child. This white paper will discuss the issues behind childhood obesity in regards to our rapidly changing society. This paper will focus on the long term problems that are associated with being overweight as a child and adolescent. There are several ways to resolve or reduce the percentage of obese children and this paper will offer solutions from different perspectives as well as the possible difficulties that may be encountered with these solutions. The solutions presented are: to increase education about healthy diets, reduce the amount of sedentary time during a child's day, and increase education about the value of physical education.

As our society is becoming more reliant on technology and many of our choices are focused upon convenience, children are becoming the victims of this new lifestyle. We must educate children on the effects of eating healthier foods and spending more time playing and exercising. The purpose of this project is to present solutions to the issues of rising childhood obesity rates and to present possible solutions to reduce this rate and allow the informed individuals make decisions on how to educate their own children on how to make healthy choices.

## **Childhood Obesity: Background and Problem Discussion**

The best way to properly understand the issue of childhood obesity today and plausible solutions one must first understand the causes behind childhood obesity. By researching our rapidly changing society, one can understand the causes behind childhood obesity. Once we understand the societal issues at hand, we will be able to establish solutions that will be able to reduce the percentage of overweight children.

### **History of Childhood Obesity**

Over time, the rate of childhood obesity has been rising. The history dates back to the early twentieth century. In the 1960s and 1970s only 13 percent of American adults and 5 to 7 percent of American children were classified as obese. The difference today is that 17 percent of children, 32 percent of males, and 36 percent of adult females are obese. (Johnson). It's not to say that one of the factors of obesity is a from an individual's genes, but the rapid increase in obesity shows that it is from obesogenic environments. This type of environment promotes inactivity and overeating caused by our society's change in lifestyle.

In fact, in 1975, 47 percent of women who had children younger than 18 worked outside the home; in 2009, 72 percent of women with children under the age of 18 worked outside the home (Johnson). That is a 25 percent increase within 29 years. This rapid increase of mothers working outside the home has altered the lifestyle of many Americans. Families are less likely to prepare healthy meals ahead of time and as a result, swing by the drive-thru after work for the convenience of a quick meal for their families.

In regards to our diet, we have encountered some major changes as well. The number of fast food restaurants per capita has doubled from 1972 to 1977 (Johnson). The availability of these fast food restaurants have taken a toll on our bodies. The available per capita calories has increased from 3,250 calories per day in 1970 to 3800 calories per day in 1997 (Chou et al., 2004). Fast food restaurants are more prominent in ethnic-minority neighborhoods and market directly to the ethnic minority children. To complement the quick drive-thru meal, soft drinks and other sweetened beverages have become a culprit in the obesity epidemic. Soft drinks and juice compose 6 percent of all calories consumed in 2 to 5 year olds, 7 percent for 6 to 11 year olds, and more than 10 percent for 12 to 19 year olds. Teens who are 12 to 19 years old get more of their calories from sodas than from milk (Johnson). It is obvious that the changes of our diets have severely impacted the rates of childhood obesity over the past few decades.

With all of the recent technology advances with cell phones, gaming consoles, and tablets, children have been spending considerably more time in front of screens rather than being physically active. "Today's children are spending an average of seven hours a day on

entertainment media, including televisions, computers, phones and other electronic devices” (Media). The increase in the sedentary time of children is astonishing. These facts outline the issues at hand and are the starting point for understanding solutions. The next section, “Problems of Childhood Obesity” goes into more detail about the effects of being obese as a child.

## **Problems of Childhood Obesity**

The issues associated with childhood obesity that have arisen as a result of societal changes are certainly something that needs to be addressed. The physical and mental health concerns will be discussed in detail in the following sections one at a time.

### *Physical Concerns*

The most obvious effect of childhood obesity are the physical concerns. Being overweight as a child can have long-term effects on the health of one’s body. The physical concerns associated with being overweight are presented in the following paragraphs.

As our society continues to become more technology centered and fast paced, the physical concerns of childhood obesity are rising as well. According to [healthychildren.org](http://healthychildren.org), “5 to 10 years of age, 60% already had at least one risk factor for cardiovascular disease, such as high cholesterol levels, high triglycerides (another type of blood fat) and high blood pressure” (Physical). This many problems at such a young age may be very surprising but there are more health problems associated with being overweight.

The well known disease, “adult-onset diabetes” or now more commonly known as Type 2 diabetes has been diagnosed in an alarming number of children. Recent research has revealed that 25% to 60% of newly diagnosed diabetes in children is Type 2 rather than Type 1. This is caused by the inactivity and poor diets of children. Other health problems associated with childhood obesity include but are not limited to: impaired glucose tolerance, insulin resistance, breathing problems such as sleep apnea and asthma, joint problems and musculoskeletal discomfort, fatty liver disease, gallstones, and gastroesophageal reflux (Health). These lengthy list of health problems can lead to various diseases and health concerns that may need constant medical care and attention.

Additionally, the long-term effects of being overweight will most likely result in the child being overweight as an adult. “About 20% of obese 4 year olds will grow up to be obese adults. That figure rises to 80% among teenagers who are overweight” (Physical). Not surprisingly, these children who become obese will certainly experience a great number of health problems.

### *Mental Health Concerns*

Moving on from the physical health concern associated with childhood obesity, one must also consider the mental health and psychological concerns by being obese as a child.

As noticed in adults, children too feel unhappy about their body shape when they are obese. This stems from early in their lives when they often encounter criticism from their families about their bodies (Sousa). In addition, society views obesity very negatively. They tend to believe that people who are obese are “weak-willed” and “unmotivated”. Obese individuals are often aware of these negative views, and internalize them, putting themselves at risk for disorders of mood, anxiety, and substance abuse (Collins). An obese child often faces self-esteem issues from school as well. An obese child is subject to bullying and name calling by peers. On the flip side, the child may in turn be the bully. He or she may bully others due in an effort to feel superior and powerful while trying to overcome his or her own insecurities (Sousa). Obese children may be under more stress and feel as if he or she does not belong. He or she may often feel lonely and less likely to consider his or herself popular and well-liked (Emotional). This can lead to potential long-term confidence issues as an adult.

Ironically, food is often used as a coping mechanism by those who suffer with weight problems when they are sad, anxious, stressed, lonely, and frustrated (Collins). When these children are feeling any of these emotions they are more likely to turn to food to help cope. Although this may alleviate some of the temporary feelings, the weight gain that results may cause a depressed mood due to their inability to control their stress (Collins). The resulting guilt may cause the a continuous pattern of coping these emotions with unhealthy eating habits.

Alongside depression and anxiety, there are a few other problematic eating behaviors that can be caused from being obese. These include “mindless eating,” frequent snacking on high calorie foods, overeating, and night eating (Collins). These may appear to be common issues among any average American however, binge eating disorder (BED) is listed in an appendix of the Diagnostic and Statistical Manual of Mental Disorders. It is characterized by: recurrent episodes of eating during a discrete period of time (at least 2 days a week over a 6 month period); eating quantities of food that are larger than most people would eat during a similar amount of time; a sense of lack of control during the episodes; and guilt or distress following the episodes. It is estimated that BED is estimated to occur in approximately 2% of the general population and between 10% and 25% of the overweight population (Collins). This disorder results in a vicious cycle for someone who is obese.

# **Alternative Solution 1: Increase Education about Healthy Eating**

## **Introduction to Healthy Food Education**

The child's understanding about health and nutrition starts in the home. They learn from watching what their parents and siblings eat and observing the type of food that is served to them at the dinner table. Thus by teaching children at a young age about obesity prevention, they are more likely to make good health decisions as adults. Parents won't be at their side every minute to encourage them to make the healthy choice. When they are in the school cafeteria, out with friends, or eventually living on their own, they need to know what types of food to put in their body, and how much of it, to maintain a healthy lifestyle. This can be done by teaching children early on about portion sizing, and by providing a home environment that encourages healthy eating with minimal junk food temptations.

## **Method 1: Educate Children about Appropriate Portion Sizing**

Portion sizing is an element of health that is so often overlooked. People often think that as long as they are generally staying away from fast food and make sure to eat veggies here and there they are relatively healthy. The truth is that there is actually a set amount of fruits, vegetables, and protein that our body requires on a daily basis. Mary Mullen for *Kids Eat Right* defines a serving size as "a specific amount of food or drink that is defined by common measurements, such as cups, ounces or tablespoons". A serving size is the amount of food that a child *should* eat, to be healthy. This is not to be confused with a portion size, which is the food that actually ends up on the child's plate and that they choose to eat (Mullen). So in other words, a child's portion can be both below and above the recommended serving size.

In order to know what the correct portion sizes are, we can turn to guides such as the MyPlate resource for help. Based on the *Dietary Guidelines for Americans*, MyPlate essentially is an educational tool that has replaced the traditional pyramid since 2011. It is still focused on the five main food groups, but instead of a pyramid it is displayed on a plate, to allow children to better visualize how much of each group they should be eating in a given meal. It is a step up from the old pyramid graphic because it is more personalized for each individual child thus allowing for a more accurate estimate of how many calories a child should be consuming. This information is based on a number of factors including the child's age, sex, weight, height, and the level of physical activity they are engaging in daily. Obviously a teenage male that is taking part in multiple physically demanding football practices daily, needs more food than he would otherwise due to how rapidly he is burning calories. The MyPlate tool accounts for that (USDA).

If parents are seeking an even simpler guide to help teach young children about portion sizing, then they can use basic, household items to help them visualize how much of each food group should be on their plate. For example, their vegetable portion should be about the size of a

baseball and their fruit portion about the size of a tennis ball. Eventually, children will learn to associate how much food is on their plate with the size of that particular item and will know if they need to alter it accordingly (Mullens). Next we will address a second method to help children to make better food choices.

## **Method 2: Nutrition Education at Home**

The second way to help children make better food choices is by providing a home environment that encourages it. This can be done in a variety of ways, including setting a good example as a parent. Children learn from watching their parents. If they see their parent grabbing a burger and fries in the drive through all the time, they will be more likely to want to eat accordingly. However, if a child sees their siblings and parents eating balanced meals then they will be more encouraged to follow suit.

It is recommended that children be taught that it is important to be done in moderation. Instead of beginning meals by bribing children with a desert if they finish everything, parents could try to make eating fruits and vegetables more exciting. Eating fruits and vegetables doesn't have to be conveyed as a type of punishment, but as something that will truly help them grow and feel better as individuals (Dairy Council of California).

Parents could try cutting them into creative shapes or serving them in a way that will make them more appealing to young children.

To set a child up for success, parents should try to ensure that the portions of potentially less desirable foods such as brussel sprouts, are small enough that the child can easily finish them. This way, they gain a sense of accomplishment when they eat everything on their plate.

Snacks are another important area to consider. Parents can try to keep junk food like chips and cookies out of children's eyesight and reach so they don't have unnecessary temptations. When packing a child a snack to take to school, parents can use small bags to portion out the amount of food they are giving to their child. This will likely prove to be a more successful option than simply packing an entire bag of pretzels and hoping the child will only eat part of them (Build Healthy Kids). We will next look at the advantages and difficulties of using this method.

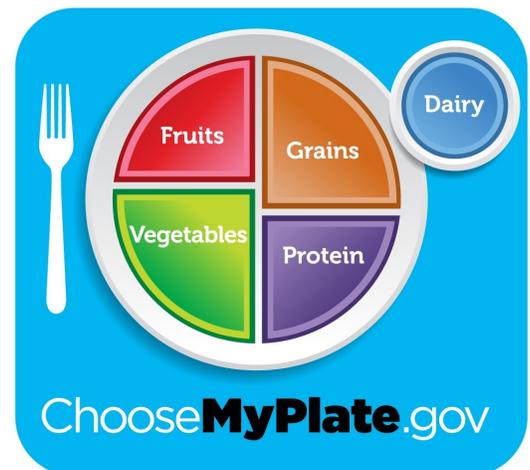


Figure 2: USDA's My Plate. (Harvard School of Public Health).

## **Advantages of Nutrition Education**

There is a multitude of advantages to giving children the tools they need to succeed in achieving proper nutrition. It can be difficult to break old habits while an adult, if a child grew up being surrounded with fried foods and sweets. However, if a child is brought up being taught the value of healthy eating and shown how to give their body the fuel it needs to function properly, they will likely take these lessons into their adulthood (Dairy Council of California). Proper health education impacts the rest of a child's life. It influences not only the way they will choose to eat as adults, but potentially how they might educate their own children to eat one day. An end to the childhood epidemic starts with one generation at a time and it starts at home.

## **Difficulties of Nutrition Education**

There are few disadvantages of showing children how to properly portion their meals and creating a home environment that fosters a positive relationship with food and nutrition. However, this does not mean that it will be easy to implement. It is possible for children and particularly adolescents, to develop an obsession with maintaining the perfect diet. If they slip up or don't physically see the results they might have imagined they should have, they could become discouraged. This can be avoided by teaching children not to feel guilty when they have the occasional sweet. A positive relationship with food does not include viewing it as something that has power over them, but rather as something that is vital to their overall wellbeing.

## **Alternative Solution 2: Reduce Sedentary Time**

### **Introduction to Reducing Sedentary Time**

The basic definition of sedentary time is any time that someone is sitting or lying down. This could be while watching television, playing computer games, scrolling through your phone, or anything along those lines. Although children do not need to completely cut out sedentary time, because everyone needs a little time to relax, the issue is that some are just spending too much time doing it. One thing that parents can help their children do to decrease this sedentary time is help them set goals and create a plan. Children can't always do it on their own, in fact they might not even understand the effects that sedentary time can have on them. So it is useful for a parent to step in and help them come up with goals. Along with that, a big chunk of sedentary time is spent in front of some sort of screen. If children could reduce that they could be on their way to reducing this sedentary time as a whole.

## Method 1: Set Goals and Create a Plan

It is easy to simply say you are going to do something, but it is much harder to actually follow through with this goal and do it. Parents may not realize it, but helping their children to set a goal and rewarding them after they achieve it can significantly increase the likelihood of the child actually completing this goal. According to Lyz Gilgunn, a health promotion coordinator, “Experts tell us that people who set goals are more successful than those who do not” (Gilgunn). Setting goals gives the child something to look forward to, whether there is a reward at the end of the line or not. By completing their goals, the child will feel a sense of accomplishment, which can be a reward in itself. In this case, the goal should be to reduce sedentary time.

As mentioned above, sedentary time is the time spent sitting or lying down. It is useful to know some of the risks associated with too much sedentary time, to help encourage children and parents. According to Dr. James A. Levine, sitting too much is linked with multiple health concerns including obesity, cardiovascular disease, cancer, increased blood pressure, high blood sugar, and even death. Dr. Levine also did a study where two groups of adults were studied with varying activity levels. The adult with the higher sedentary time had “nearly a 50 percent increased risk of death from any cause” (Levine). Although the focus here is children, these results are alarming in adults because the bad sedentary habits of children will likely carry into adulthood.

It is recommended that children and teens spend about an hour a day doing some sort of physical activity, according to the Center for Disease Control and Prevention. This does not seem like that much time, especially when you put it into perspective of how much time children are spending, on average, sedentary. An analysis was done by the University of California, San Diego, that found that children were sedentary between 6-8 hours every day. If they could lower those numbers by even just one hour, then children would be better off. That is where the goal and plan making come in. A goal does not have to be complex and should not seem impossible. In fact, when making goals parents and children could utilize the SMART method to make their goals more attainable. The SMART method can be seen in **Figure 3**. The concept of this method says to make the goal specific, measurable, attainable, relevant, and time bound. An example of a goal that would work is to reduce the sedentary time of children by one hour for the next month.



Figure 3: SMART Goal Setting (Gilgunn)

## **Method 2: Reduce Screen Time**

The second method that can be helped to reduce the sedentary time is to reduce the screen time in children. Screen time can be anything from watching television or movies, to playing games on computers or other electronic devices. Screen time is something that can be monitored by parents, however that can be a struggle sometimes if the child is very adamant on continuing to watch their show or play their game.

There was a study conducted by Chad Spoon that had some startling results. In this study, it was shown that the children who watch television for three hours or more a day have a 65 percent higher chance of being obese, as opposed to those children that only watch television for less than an hour a day. Another finding was that kids who have their own television in their bedrooms watch more than double the amount than the kids that don't. These numbers are startling because this is just taking into account the children watching television, it does not take into account those playing video games. In this study, there was a direct correlation between the amount of screen time and obesity. Therefore, by reducing the time that children stare at a screen all day, their chances of obesity will also decrease.

In an attempt to try and increase physical activity, gaming companies have come up with interactive games that still allow children to play video games, but be active at the same time. Xbox by Microsoft for example, came out with a device called the Kinect. The Kinect uses motion sensors to allow the player using it to be physically active and interactive with the game. Michael Walsh from New York Daily News spoke with nutritional scientist from University of Chester in England, Mike Morris, who found “the Kinect’s whole body movements led to greater physical exertion.” The Xbox Kinect can be seen in **Figure 4**. Even though this concept may not be reducing the screen time, it is increasing the physical activity which is the ultimate goal.



Figure 4.

## **Advantages**

Reducing sedentary time can be directly related to reducing chances of obesity in children. Although this may not be the easiest solution for some children, it is definitely an effective one. For children that only watch television and play video games, taking these things away can be a big struggle at first. If the parents are there to help and encourage them though, then it will come easier if they are led by example. There are multiple ways that a child can be active so they have many options. It is even better when the child is doing something that interests them, instead of being forced to do something. The advantages of making a goal is that it gives the children

something to look forward too. The advantages of reducing screen time is it encourages the children to be active instead.

## **Disadvantages**

There are some disadvantages of these solutions for certain situations. One situation would be if the child does not have parents that are able to support these solutions. For example, if a parent has to work all the time and cannot be home often, then that child will not have the support or encouragement that other children have. They also may not be allowed to go outside if their parents are not home to watch them, limiting them to the inside space. Another situation would be if the child lived in an unsafe neighborhood. If the child does not feel safe in their surroundings then they won't want to go outside and be active.

## **Alternative Solution 3: Increase Education about Physical Exercise**

### **Introduction to Physical Exercise Education**

Children are often told that exercising is good for you, but they are not often told why. Most understand that exercising keeps you healthy however we don't often talk about how being healthy decreases your risk of other factors. One such factor, such as childhood obesity, is not often enough tied to physical exercise in children's' education. They are not told the cause and effect of leading an active life. By tying the two concepts of exercise and health even further, we feel that we could decrease the occurrences of childhood obesity by either educating parents or educating children.

### **Method 1: Educate Parents**

Typically, education starts at home with what parents are teaching their children. This places value on educating parents so that they are informed. By having informed parents, it is more likely that this information is passed down to their children. Thus, by educating parents of the benefits of physical education we can also education children.

When addressing how to get parents involved the school becomes the biggest resource for parents. According to, Aaron Beighle, one way to do this is to put a small twist on the average open house. Typically, at the beginning of the school year most schools host an open house to welcome families to the school. Beighle argues making this an "Active Open House." This activity would loan out pedometers to the parents to track their steps around the school during the open house (Beighle). After the open house is completed, the parents return the pedometers and are given information about their children's activity throughout the day (Beighle). This is a

great way to get the parents involved and also track how active their students are throughout the day to understand where there could be more activity.

Another way that schools can get parents involved is by hosting events that parents can participate in with their children. One way to do this is through hosting events such as 5k runs or hosting a parent/child field day (Physical). As Fitness Finders points out, most parents are not available throughout the day to be involved in the school (Physical). To combat this, the schools can host these events at night or on weekends to get the parents involved at the school thus taking part in furthering education for physical education. These events provide the means to get the parents informed about the benefits of staying active as well as the benefit of supporting the school's physical education program.

## **Method 2: Educate Children**

When looking at the issue of childhood obesity one should also look at the issue of the knowledge available to children. The Nation Association of State Boards of Education has stipulated the need for 150 minutes a week for physical education in elementary schools and 225 minutes a week for those in middle schools and high schools (Council). Given that this time is outlined in state requirements, it should also be addressed in classrooms. Often they are not being implemented nor are given the attention it deserves. As discussed above, there are benefits of children decreasing their sedentary time. Through educating children, they will be given first hand information on how to better themselves. This gives responsibility to the child to understand how their actions have potential effects on their health.

Physical education for students has the potential of increasing their health throughout different aspects of their lives. Based on the National PE Standards stated by the Society of Health and Physical Educators, physical education gives students the skill set to “achieve and maintain a health-enhancing level of physical activity and fitness” (International). Among many things, this skill set allows students to have better command over their motor skills, a better understanding of concepts and principles related to health, and the ability to discuss ways in which to achieve these health-enhancing activities (International).

Another facet of bringing physical education to schools is that children tend to have more activity in all aspects of their lives. By having physical education it is more likely to ensure overall healthy lifestyles (Council). These children tend to have better work lives, more active social lives, and it has been shown that these children grow to support their communities (Council).

## **Advantages**

Through the education of both parents and children the odds of being well informed about the benefits of physical education are increased. It has been shown that students who partake in the

advised physical education standards become more active and often lead healthier lifestyles (Council). This is also correlated with lowering obesity in these populations (Council). Also, through educating parents, children are also better informed to make healthier decisions.

## **Disadvantages**

Implementing standards in schools nationwide is often a time consuming, high cost challenge. Some schools are not equipped with the resources or the space to allow children to participate in active activities. Also, the expectation of educating parents puts a lot of pressure on parents to be involved and take the time to come to schools. With the hectic lifestyle some parents cannot afford to time time off work to come to schools. By relying on the parents to come to school hosted events leaves no wiggle room for them not to come. Without the parent coming to these school events there would not be a way to educate them of these benefits.

## **Conclusion**

The childhood obesity epidemic is becoming a prevalent problem in our society. Over time, we have seen an increase in childhood obesity which can also be correlated with the changes in lifestyle and diet. There are now proven health concerns and mental health concerns for children who experience obesity early in life. To combat this we have proposed three solutions to the problem of childhood obesity. First, we propose to increase education about healthy eating. We believe this can be achieved by educating children about healthy portion sizes and education at home. This should outline what should be eaten to meet daily recommendations rather than just strictly avoiding fast food. This can also be achieved by setting a good example at home.

Secondly, we propose to decrease the amount of sedentary time a child experiences every day. This can be done by setting goals and making a plan as well as reducing the amount of screen time a child has. Certain goals entail setting a specific amount of time to be doing some sort of physical activity this can also include reducing the amount of time a child sits stationary in front of a TV, iPad, computer, etc. Thirdly, we propose increasing education related to physical exercise. This education can be targeted to children and parents. By setting the example in schools and at home, we can set the example that children need to be conscious of the time they spend engaging in physical exercise. Each of these solutions come with advantages and

disadvantages such as time, money, or support. However, by implementing any of these steps we believe that we will see benefits of leading a healthy lifestyle in children.

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