

Impact of Physical Education on reducing childhood obesity

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Abstract: Physical education (PE) is a crucial tool in combating childhood obesity by promoting regular physical activity, which is vital for maintaining a healthy weight and preventing obesity-related health issues. PE not only enhances children's physical fitness but also instills lifelong habits of healthy living, including the importance of exercise and nutrition. Beyond physical health, PE supports mental well-being, fosters self-esteem, and strengthens social skills. Effective implementation requires collaboration among schools, legislators, parents, and communities. Prioritizing PE programs ensures healthier futures for children, reducing the prevalence of obesity and its broader societal impacts.

[Mallanna, N.B. **Impact of Physical Education on reducing childhood obesity.** *The International Journal of Interpretation, Observation and Analysis*, 2025; Volume 4, Issue 1:94-98 (October-December). ISSN 2349-0713, Peer-reviewed (online/offline), Refereed, Indexed and International Journal (Since 2013), Global Impact Factor: 6.205

Keywords: Childhood Obesity, Physical Education (PE), Healthy Weight, Physical Activity, Obesity Prevention , Cardiovascular Health

Introduction

Child obesity is one of the most serious public health challenges of the 21st century (2018). Childhood obesity has emerged as a significant global public health challenge, with rates steadily rising across many regions. This alarming increase in childhood obesity presents serious health risks, underscoring the urgent need for effective interventions. The "EpPOI: Education to Prevent Childhood Obesity" project adopts a multidisciplinary approach to raise awareness about the importance of addressing childhood obesity, focusing on educational initiatives that encourage healthy lifestyle changes (Porri et al., 2024). A task force from the European Childhood Obesity Group and the European Academy of Pediatrics reviewed English-language meta-analyses, systematic reviews, randomized clinical trials, and observational studies from various databases, including PubMed/MEDLINE, Cochrane Library, Science Direct, MEDLINE, and EBSCO. This review, which examined literature published between 2018 and August 2020, culminated in the development of a consensus statement. The statement highlights the critical role of physical activity (PA) in preventing excessive body weight and provides age-appropriate PA recommendations, as well as guidance for school-based interventions, parents, and guardians (Wyszyńska et al., 2020). In southern Europe, over 40% of children under the age of 10 have been diagnosed with overweight or obesity, compared to fewer than 10% in northern Europe. Additionally, the prevalence of overweight is notably higher among girls (21.1%) than boys (18.6%) (Ahrens et al., 2014). Obesity is a complex and

multifactorial condition that primarily results from an imbalance between calorie intake and expenditure. Physical activity (PA) plays a crucial role in managing energy balance, contributing approximately 25% to total energy expenditure (Westertep, 2017). Therefore, PA is an effective tool in promoting weight management and combating obesity (Swift et al., 2014).

Over the last several decades, childhood obesity has become a worldwide pandemic with serious consequences for children's health and wellbeing. Over 38 million children under the age of five were categorised as overweight or obese in 2019, according to the World Health Organisation (WHO), indicating a sharp rise in the prevalence of overweight and obese youngsters. The concerning trend of rising kid obesity rates is not limited to high-income nations; it is also being seen in middle-class and low-income nations. The epidemic's effects are dire; it raises the likelihood of developing long-term health problems including type 2 diabetes, cardiovascular disease, and a number of psychological problems like depression and poor self-esteem. Insufficient physical exercise is one of the main causes of juvenile obesity. Children now have less possibilities to participate in physical activities due to the sedentary nature of modern living and increasing screen usage. In light of this, physical education (PE) in schools is shown to be an essential instrument for encouraging physical exercise and preventing juvenile obesity. PE offers children organised chances to learn the value of fitness, form lifetime healthy habits, and participate in regular physical exercise. Physical education is

more than simply a set of exercises; it's a comprehensive program designed to enhance motor skills, physical fitness, and health-related information. It is intended to impart in kids the values of leading a healthy lifestyle and the behaviours needed to continue engaging in physical exercise for the rest of their lives. PE lessons help kids burn more calories, get in better shape, and control their weight by getting them involved in a variety of physical activities, games, and sports.

Literature Review

The increasing prevalence of childhood obesity and its associated health risks underscore the need for widespread prevention efforts. Various public health interventions aimed at increasing physical activity among children have been implemented in schools, families, and communities. These efforts show promising strategies for addressing childhood obesity (Goran et al., 1999). The primary modifiable risk factors for childhood obesity are unhealthy eating habits and low levels of physical activity, both of which are influenced by aspects of the built environment (Henry et al., 2024). Engaging children in regular physical activity is essential, as a lack of it increases the risk of obesity, cardiovascular diseases, diabetes, and other chronic conditions, all of which have long-term consequences (Pradeep Singh Chahar, 2014). In particular, excessive screen time and sedentary behaviour contribute significantly to obesity and associated health risks such as cardiovascular and metabolic diseases, while also impeding skeletal muscle development, cognitive function, and mental health (Wang et al., 2024). Research has shown that children with obesity are less physically active than their non-obese counterparts (Trost et al., 2001), and this is compounded by the fact that parents of obese children are also typically less active, influencing their children's activity levels (Chan et al., 2024). Tackling childhood obesity in regions like China requires a multifaceted approach that integrates social, economic, cultural, and environmental strategies. These should combine school-based, family-based, and individual-based interventions, with collaborative efforts from various sectors (Yuan et al., 2024). The COVID-19 pandemic has exacerbated childhood obesity rates, leading to an increase in sedentary behaviour and unhealthy eating patterns among children. Beyond the immediate physical health risks, such as type 2 diabetes and cardiovascular diseases, childhood obesity is also linked to psychological issues like depression, anxiety, and low self-esteem, which can persist into adulthood (Goel et al., 2024). Obesity in childhood is associated with chronic health conditions like hypertension, dyslipidemia, and metabolic syndrome,

all of which set the stage for long-term health issues. Moreover, obese children are more likely to become obese adults, perpetuating a cycle of health problems (Freedman et al., 1999; Pulgarón, 2013). Addressing childhood obesity requires early intervention to prevent its long-term physical and psychological consequences. Public health efforts must focus on promoting healthy eating and physical activity at an early age, particularly in the context of the built environment, to break the cycle of obesity-related health issues.

The Value of Exercise in Education

A complete education must include physical education (PE), which equips students with the information, skills, and attitudes needed for lifetime fitness and health. A structured, sequential K-12 curriculum that includes cognitive content and learning opportunities across a range of activity categories is called physical education (PE). Basic motor skills, physical fitness, games, team, dual, and individual sports, tumbling and gymnastics, and aquatics are some of these categories. Developing physically literate people with the knowledge, abilities, and self-assurance to enjoy a lifetime of healthy physical exercise is the main objective of physical education.

The Advantages of Frequent Exercise for Kids

Frequent exercise is crucial for the health and wellbeing of kids. Beyond only improving physical health, there are additional advantages for mental and emotional health, academic achievement, and the development of social skills. The following are some main advantages:

1. **Physical Health:**
 - **Building and Preserving Strong Bones, Muscles, and Joints:** Frequent exercise promotes the growth and upkeep of robust bones, muscles, and joints. Running and leaping are two examples of weight-bearing exercises that are very good for bone development.
 - **Weight Control and Fat Reduction:** Exercise raises energy expenditure, which aids in avoiding obesity and helping people maintain a healthy weight. By using fat that has been stored as an energy source during exercise, it also helps to decrease body fat.
 - **Preventing Cardiovascular Diseases and High Blood Pressure:** Regular exercise improves circulation, strengthens the heart, and lowers the risk of high blood pressure and other cardiovascular conditions.
2. **Mental and Emotional Health:**
 - **Enhanced Academic Achievement:** Several researches have shown a favourable association between physical exercise and academic achievement. Learning requires improved cognitive function, attention, and focus, all of which are enhanced by physical exercise.
 - **Improved Classroom Conduct:** Kids who engage in regular physical exercise often behave better in the

classroom. Engaging in physical exercise helps alleviate anxiety and depression symptoms, resulting in improved mood and behaviour. - Greater Self-Esteem: Children's confidence and self-esteem may be increased by participating in physical activities and reaching fitness objectives. Their academic performance and social relationships may both benefit from this good self-perception.

3. Development of Social Skills: - Teamwork and Cooperation: Children must cooperate as a team in order to complete many physical education tasks. Teamwork, cooperation, and communication skills are fostered by this partnership. - Sportsmanship and Fair Play: Children learn the value of sportsmanship and fair play via physical education. These principles are necessary for cultivating empathy and managing wins and losses with poise.

Role of Schools in Providing Physical Education

When it comes to giving kids physical education, schools are essential. Children spend a great lot of time at school, making it the perfect environment for organised physical education programs that encourage physical exercise. Here are some ways that schools help:

1. Structured atmosphere: - Physical education is a major component of the curriculum in schools, which provide a structured atmosphere. Regardless of their socioeconomic background or background, all children will have access to regular physical exercise thanks to this arrangement.

2. Qualified Instructors: - Teachers with certification in physical education are prepared to lead age- and developmentally-appropriate physical activities. They are able to recognise and cater to each student's unique requirements, guaranteeing that every kid can take part in and gain from physical education.

3. All-inclusive Curriculum: - A well-crafted physical education curriculum offers a range of activities to suit students' interests and ability levels. By exposing kids to a diverse array of physical activities, this diversity helps them explore their interests and acquire a wide range of abilities.

4. Health Education: - Health education components of physical education programs often educate kids on the value of a healthy diet, regular exercise, and general well-being. Children who get this knowledge are better able to make decisions about their lifestyle and health.

5. Promoting Physical Activity Throughout Life: - Schools encourage youngsters to be physically active throughout their lives by cultivating a favourable attitude towards physical exercise. This lifetime dedication to exercise is essential to avoiding obesity and preserving general health.

Others

An increase in energy use

Increasing energy expenditure is one of the most direct ways physical education reduces obesity. Children participate in a variety of physical activities in physical education programs, including sports, running, leaping, and exercises that increase heart rate and burn calories. This increased physical activity encourages the maintenance of a healthy weight and inhibits the formation of fat. A negative energy balance is necessary for weight reduction and weight control, and it is facilitated by the calories burnt during physical exercise. Children who engage in regular physical exercise via PE also have higher metabolic rates than their sedentary classmates, meaning that they burn more calories throughout the day. This effect occurs even while the children are at rest. The heightened basal metabolic rate contributes to the regulation of body weight. Children who engage in physical exercise are also less likely to overeat and more likely to maintain a balanced diet because it helps manage the hormones that affect hunger.

Formation of Healthy Habits for Life

Children learn the value of healthy life and frequent exercise via physical education lessons. Children learn about the advantages of physical exercise via teachings and scheduled activities. These benefits include helping children maintain a healthy weight, strengthening their cardiovascular systems, and boosting their general well-being. These teachings encourage kids to include physical exercise in their everyday routines by assisting them in understanding the advantages of maintaining an active lifestyle. Additionally, physical education programs often expose kids to a range of sports and workouts, enabling them to discover hobbies. They are more likely to continue participating in physical activities throughout adulthood and outside of school hours if they find these activities enjoyable. Early adoption of these healthy behaviours is essential because children who are active grow up to be active adults, which lowers their long-term risk of obesity and associated health problems.

Psychosocial Advantages

Physical education has important psychological benefits in addition to the physical ones, which help maintain a healthy weight. Exercise has been shown to enhance body image and self-esteem. Youngsters who have strong self-esteem and self-efficacy are more inclined to engage in physical activities, which creates a positive feedback loop that supports consistent exercise. In addition to lowering stress and anxiety, physical exercise also helps prevent weight gain and harmful eating habits. When kids are nervous or disturbed, they often turn to food for solace, which may result in overindulgence and obesity. Physical education helps reduce these

behaviours and encourages a healthy lifestyle by lowering stress levels.

Additionally, taking part in physical education (PE) encourages social contact and collaboration, which helps kids grow in their social skills and feeling of belonging. Since kids often enjoy playing sports with their friends, these social bonds might serve as extra encouragement to keep active. The companionship and encouragement of other students may enhance and prolong the enjoyment of physical exercise.

Encouragement of General Fitness and Health

Physical education supports a healthy weight indirectly by promoting general health and fitness in addition to its direct influence on weight control. Frequent exercise strengthens and prolongs muscles, improves cardiovascular health, and boosts flexibility. These enhancements make it simpler for kids to remain active by improving their capacity to participate in a variety of physical activities without becoming tired or hurt. They also help them have a healthier body composition. To sum up, physical education has a multiplicity of effects on obesity, such as heightened energy expenditure, the formation of lifetime healthy habits, and the supply of psychological advantages. PE plays a critical role in preventing and lowering juvenile obesity by encouraging regular physical activity, emphasising the value of exercise, and enhancing mental health. The many advantages of physical education emphasise the need of comprehensive PE programs in schools to guarantee that kids have healthier, more active lifestyles.

Conclusion

An essential part of combating the rising kid obesity pandemic is physical education, or PE. PE, an organised curriculum designed to encourage regular physical exercise, is crucial for helping kids maintain a healthy weight and avoiding a number of health problems associated with obesity. Children who regularly participate in physical activities may increase their cardiovascular health, burn calories, gain muscle, and improve their general physical fitness—all of which help them maintain a healthy body weight. Additionally, PE classes help kids form lifelong habits by teaching them the importance of physical exercise. Lessons on healthy eating, the advantages of exercise, and methods for maintaining an active lifestyle outside of school are often included in these programs. PE helps delay the emergence of obesity and other linked problems including type 2 diabetes, hypertension, and cardiovascular diseases by establishing these good behaviours at a young age. PE has advantages for mental health in addition to physical health. Frequent exercise has been connected to better mood, less stress, and increased self-worth. Youngsters who are

confident in themselves are more inclined to be active, which feeds back positively and promotes both physical and emotional well-being. Additionally, when kids engage in sports and group activities that promote a feeling of community and belonging, physical education may help kids develop their social skills and collaboration. Effective PE program implementation calls for coordinated efforts from a range of stakeholders, including the community, legislators, parents, and schools. Comprehensive physical education programs that are interesting and instructive must be taught in schools by staff members who have received the appropriate training and resources. Legislators must push for laws requiring PE instruction on a regular basis and allocating funds for school sports facilities and supplies. It is vital for parents and guardians to encourage their kids to engage in physical activity and to provide an example of good behaviour at home. Participation in the community is also essential. By setting up community sports events and offering secure and convenient recreational spaces, local governments and organisations may assist school physical education programs. Children's after-school physical exercise may be encouraged in a supportive atmosphere that can be established via cooperative efforts between schools and community organisations. Ultimately, physical education plays a vital role in the battle against juvenile obesity. It not only encourages physical exercise and a healthy lifestyle, but it also gives them the information and abilities they need to carry these habits into adulthood. We can assist kids in leading healthier, more active lifestyles and considerably lower the incidence of childhood obesity by giving priority to, funding, and implementing supporting policies for physical education programs. These kinds of programs have advantages that go beyond the individual; they also improve communities and the future health of everyone

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