Region - Educational Research and Reviews, 2021 , Volume3, Issue4
DOI: 10.32629/rerr.v3i4.565
ISSN Online: 2661-4634
ISSN Print: 2661-4626

Should Secondary Schools Increase or Decrease the Time of Physical Education?

Meixue Gao

Hebei Hengshui Middle School, Hengshui, Hebei, China

Abstract: Although physical education is considered an essential part of the secondary school curriculum, the importance of physical education varies significantly from country to country. Some schools provide enough time for the sports curriculum; in contrast, many secondary school physical education programs are replaced by math and language subjects. This paper discusses whether secondary schools should increase or decrease the time of physical education by studying the positive and negative effects that physical education may bring to secondary school students. It evaluates some of the key controversy issues and arguments like the relationship between sports curriculum and physical health and mental health, and the relationship between the physical education and academic performance. Based on this, it argues that secondary schools should increase the time of physical education, or at least provide them with adequate time. It also concludes that physical education curriculum is a kind of sports behavior with educational value, the benefits it brings to students far outweigh the harm it does to them, and the damage can be avoided by correct PE teaching methods. Therefore, secondary schools should increase the time of physical education.

Key words: physical education; secondary school; physical health; mental health

1. Introduction

Physical education (PE) has always been considered an essential part of the curriculum in secondary schools. It can be defined as organized and educational sports activities in schools. It has been argued that physical activity (PA) has some potential benefits for teenagers, such as reducing the risk of obesity, improving physical fitness, building character, improving academic performance (AP) and developing social skills. In order to complete the plan to prevent the obesity of teenagers, many governments put forward the requirement that secondary schools should increase the time of PE as one hour per day (Health and Social Care 2017). Surprisingly, most secondary schools struggle to provide adequate time for PE, and even PE classes are replaced by other subjects.

Harris (2018) claims that secondary school PE should be valued by schools because it is the only course that can achieve physical development goals and it also makes a significant contribution to the spiritual development of teenagers and lays the foundation for an active lifestyle. However, at a time when improving the physical health (PH) and mental health (MH) of teenagers is becoming increasingly important, the number of hours of PE offered to secondary school students has spiraled downward, with more than half of the teachers surveyed believing that secondary school PE should not be reduced and replaced by other subjects (Youth Sport Trust 2018).

The purpose of the controversial paper is to explore whether secondary schools should increase or decrease the time of PE by comparing the effects of PE on students' health and academic performance. It is suggested that secondary schools should increase PE because it can not only reduce the risk of obesity among teenagers and enhance physical fitness but also increase students' self-confidence psychologically. Although some people suspect that incorrect PE courses may do harm to students' PH and MH, such as increasing the risk of injury and developing low self-esteem. However, these adverse effects can be avoided by improving PE teaching planning. It will also be argued that participation in PE programs can improve AP because physical activity (PA) improves memory and resilience. After a background which tries to show the history of PE class in different countries and explain how the controversial issue has arisen, a discussion section will explore why and how PE has a positive impact on student health and academic performance.

2. Background

There is still no consensus in most countries on whether secondary schools should increase or reduce PE classes. In the past 30 years, the teaching plan of PE curriculum has been updated continuously in various countries, and the question whether PE courses should be cut has been put on government political agenda (EPEA, 2002). For example, in response to the United Nations request for the year of sport 2005, states were represented in the second world sports debate with participants from Asia, Africa, the Americas, Europe, the Middle East, and Oceania (Hardman, 2008a). The discussion involves a variety of issues, such as determining how to allocate PE time by studying its impact on academic achievement, mental health, and physical fitness (ibid).

The PE curriculum still varies significantly from country to country, even though there are often world conferences on it. In Europe, the length of these courses has been shortened year by year (Hardman, 2008b). For example, the number of PE classes in France has been reduced by two per week (Ronholt, 2005). In contrast, the sport has always been a vital part of all curricula in Finland since it was first introduced in Finland in 1843 (Heikinaro-Johansson & Telama, 2005). Throughout its history, Finnish schools have ensured the quality and quantity of PE classes to improve the physical fitness and health of teens (Finnish National Board of Education, 2004). Similarly, China is enhancing its PE standards. As Tao and Gao (2011) studied that China has vigorously promoted national sports standards, increased PE programs in schools under the banner of "China's strong youth," and even encouraged extracurricular sports training courses. In 90% of countries, PE has equal status with other subjects in policies marked by national governments, but 34% of states do not carry out PE according to act, and even in one-third of countries, PE courses are replaced by other subjects. This means that sport is equal in rules but not in practice (Hardman, 2008b).

In many countries, PE is being replaced by other subjects under the pressure of secondary school exams, even as obesity continues to plague secondary school students, schools are appropriate places to promote PA, and PE programs in schools are a simple and effective treatment for sedentary lifestyles (Sallis and Owen, 1998). However, PE is still at risk of being marginalized in schools. For example, many schools are struggling to meet the minimum number of hours legally required for physical education, with principals blaming the government's overloaded national curriculum and pressure on other subjects for the decline (National Association of Head Teachers, 1999). As teachers proposed that children are facing higher pressure on academic performance than ever before, schools are relying more on test scores as the primary result of the evaluation, they have to cut or even cancel PE programs, which means that other education goals, such as mobility, athletic ability and health, is difficult to achieve (Hutchings, 2015).

3. Critical Discussion

3.1 Physical Health (PH) and Mental Health (MH)

The health consequences of lack of physical activity are the fourth leading risk factor for death, but many teenagers

are becoming more sedentary, and even PE programs in schools have been declining (Organization W.H., 2009). For example, only 7.9 percent of middle schools and 2.1 percent of high schools in the world offer PE every day, while teenage illnesses are on the rise, including obesity, high blood pressure, colon cancer, diabetes and depression (Burgeson et al. 2007). Surprisingly, Andres (1990) pointed out that it is not accurate to say that PE in secondary school helps students' PH because secondary school students have passed the optimal time for physical growth. The issue of whether the secondary school should increase or decrease the time of PE has become one of the most controversial topics in the field of education. Health seems to be the critical factor of whether PE is essential or not. Therefore, this issue will be analyzed from the perspectives of physical health and mental health.

Secondary schools should increase the time of PE because physical exercise can primarily promote the PH of teenagers, and schools are one of the most critical environments for teenagers to engage in PA, which indicates that adequate PE provided by schools is the main way to improve the PH value of students. Over the past 20 years, obesity rates have risen sharply among teens around the world, especially in developed countries (Tomas 2003). The significant increase in the rate of adolescent obesity has intensified public focus on PA, increasing number of evidence proves that limited time of PA is one of the crucial factors of overweight and obesity in adolescents (Whitehead M 2013). Castelli (2014) concluded in a study that physically active teens tend to be thinner than their less physically active peers, and that slim teens have a lower risk of developing the disease than obese teens. Reducing childhood obesity requires more PA. In the long run, Bakirtzoglou and Loannou (2011) asserted that school sports could play a crucial role in encouraging students to participate in regular PA and those who regularly participate in PH classes may acquire lifelong exercise habits during secondary school. As shown by Pharez (2016), the experience of participating in PE in secondary school can be a critical factor in students' participation in other sports, which is an essential step toward a healthy lifestyle. This means that secondary school PE programs not only help them stay fit during school but also have a positive impact on their lifelong health.

Another critical factor that secondary schools should increase the time of PE is that sports have a positive impact on mental health. Prusak et al. (2014) concluded in a psychological survey and study that secondary school students who actively participate in PE think that PE is a kind of enjoyment, they can communicate with their peers and make new friends in the course, while students who do not actively participate in PE tend to be introverted and lack self-confidence. Those students who take an active part in PE find it is fascinating because they learn many sports activities that cannot be learned outside PE. These activities inspire them to continue to interact with classmates during breaks and after school (ibid). This means that physical activities can increase students' confidence. In a psychological study that focused on gender differences, Fisette (2013) argues that girls who were actively involved in PE believed they had the ability to compete and succeed with boys in certain PA. This significantly increases the confidence of girls, which also has a stimulating effect on girls' performance in other disadvantages.

Other schools have cut back on secondary school physical education programs, arguing that sports programs have no obvious benefit to high school students' physical health and mental health. Surprisingly, there is limited and unscientific evidence that PA has a positive effect on teenagers (Biddle et al. 2004; Cale & Harris 2005). For example, Baur (2001) reports that it is not clear whether increasing physical exercise can fight against childhood obesity, because high-calorie food is also an important factor in childhood obesity, such as fried food, fast food, and chocolate. After PE, teenagers may feel hungry and eat more high-calorie food, which leads to more obesity. Therefore, Baur (ibid) argued that it is unscientific to say that PE programs can reduce the risk of obesity among teenagers without considering diet. In terms of bone health of teenagers, Bass (2000) pointed out there is no apparent benefit between PA and bone strength in

adolescence, and if teaching method of PE is not correct, it may also have a potential impact on osteoporosis later in life. It has been argued that this may be because many middle school students are mature and healthy, and most diseases appear after puberty (Biddle et al. 2004). On the other hand, PE courses may have a negative effect on students' mental health. The characteristics of peer interaction in sports show requirements for gender relations, although teenage girls can compete fairly with boys in some games, boys have more advantages in most competitions. Faced with this problem, most girls choose to escape rather than integrate (Fisette 2013). When students are dissatisfied with their sports performance, they may feel inferior and have a negative attitude towards their classmates and teachers.

Nevertheless, the time of PE in secondary schools should be increased, because PE curriculum is an educational course, and the negative impact of PE on students' physical health and mental health can be avoided through correct teaching methods. If high schools cut back on PE, students' levels of PA are lower than they should be, and they burn less energy after puberty than students with higher levels of physical activity, which leads to stubborn obesity after puberty (Boreham & Riddoch 2001). This explains why lifelong PA is widely accepted in life. If students stop PA, the levels of PA continue to decline, so it is still vital for teenagers to maintain high standards of PA (Trost 2006). Interestingly, the physical health status of active participation in PA of adolescents is positively correlated with the cardiovascular and cardiopulmonary health of adults (Twisk 2002). In the long term, it is necessary to increase the time of PE in secondary schools. In terms of mental health, Romos and Mccullick (2015) argued that students would think positively of their classmates and teachers if they could complete course promotion and activity practice as a PE teacher course. In terms of gender comparison and participation motivation, there is strong evidence that students should determine success by completing sports tasks rather than by comparing success with classmates (Bruene 2007). Being recognized in the activity can not only enhance students' sense of competence and achievement but also strengthen their positive association with classmates and teachers.

In conclusion, although secondary school PE programs may cause temporary harm to students' physical health and mental health, these injuries can be avoided through scientific PE programs. And in the long run, PE courses bring more positive effects on students' PH and MH. Therefore, it is necessary to increase the time of PE in secondary schools.

3.2 Academic performance

Although physical activity can easily be thought of as a health benefit, PE is still marginalized in most secondary schools, where administrators believe that PE takes time away from other subjects (Youth Sport TRUST 2018). Since Davis and Cooper (1934) reported the positive correlation between participation in school PE curriculum and academic performance, the relationship between school PA and AP has been a great topic of discussion. With the passage of time and the development of society, students' academic pressure is increasing, schools and parents all agree to reduce PE, so that students have more time to prepare for study. There has been considerable debate over whether secondary schools should increase or decrease the time of PE. AP seems to be a top concern for students and parents. This part will analyze whether schools should increase or decrease the time of PE in terms of the relationship between PE and AP.

The time of physical education should be added to secondary schools because physical activity has a positive impact on brain development, which has direct and long-term benefits on academic performance. For example, one study of 24 schools proposed that when comparing changes in students' standardized test scores over a three-year period, those assigned to PE classes improved significantly more than those who did not (Donnelly & Lambourne 2011). This suggests that, in the long run, physical activity improves AP in other subjects. The reason for this is that the PA can increase teenagers' attention and memory, which can reduce inappropriate behaviors such as inattention and distraction (Tomporowski 2003). For example, Hillman et al. (2009) studied that when students walked at a moderate pace for 20

minutes, they were more accurate in answering spelling and arithmetic questions, and their brains responded more quickly than those who had been sitting. In addition, students who take part in physical exercise can complete their learning tasks more rapidly and accurately, and their homework quality is higher than their grade level (ibid). Scientists have never stopped studying the brain's underlying functions, which may explain some of the educational benefits that physical activity directly contributes to Kamjio et al. (2011) also studied that when adolescent students were randomly assigned to a sports program that provided 70 minutes of moderate to vigorous PA every weekday for nine months, the results claim that those who participated in the sports program had a lower percentage of body fat and an increased working memory ability than those who did not. Although some of the studies above were based on extracurricular physical activity, according to the research results, increasing physical activity directly increases memory, which has direct benefits to AP in the long run. This means it is necessary to increase the time of physical education in secondary schools.

However, some secondary schools still consider that physical education should be reduced or replaced by other subjects because they believe that physical education programs will not only do not benefit students' academic performance but also delay students' study time. Bailey (2005) noted that few studies had explored an exact relationship between PA and AP, and the evidence for a link between PA and AP is somewhat uncertain. For example, school sports can improve AP by increasing blood flow to the brain, altering hormones and increasing mental alertness, but these results are variable and more systematic studies are needed to fully assess the accuracy of the results. In addition, Shephard (2008) pointed out that sport was a very complex phenomenon, and any impact of school sports on AP was affected by variate of gender, race, type of exercise and intensity of activity, it was not scientific to study the relationship between sports and AP without controlling for the cultural background. For example, Melnick et al. (2012) selected 3,686 African American and Hispanic students to participate in organized sports activities in a study and found no correlation between AP and sports participation in the comparison of periodic AP after the exercise. The results of the survey have some credibility because it included as many as 3,686 students from two different cultures. Because of sports cultural background and various factors that may affect AP, it seems complicated to determine the positive correlation between physical education and academic achievement.

Nevertheless, in terms of the relationship between physical education and academic performance, secondary schools should increase the time of PE or at least maintain adequate time for PA, such as 60 to 90 minutes per day. As Bokova (2015) argued that, AP was affected by the number of factors, but if teenagers engaged in at least 60 minutes of PA a day, there may be broad social and academic benefits. Pontifex et al. (2011) emphasized that several studies had identified potential cognitive and neural mechanisms in humans that were altered after PA, such as increased blood flow to the brain, improved neural activity and response accuracy, and cognitive functions that would enhance AP. The results held even after controlling for variables (gender, weight, socioeconomic status). For example, Wittberg et al. (2009) strongly believed that teens who exercised regularly scored higher on tests in reading and math after controlling for gender, body mass index, and socioeconomic status. In addition, Roberts et al. (2010) also argued that teens who were physically active did better in math and reading, and even when controlling for socioeconomic status, they did better in math and language tests than students who were not physically active. More importantly, a study by Wilkins et al. (2003) in Virginia secondary schools found that if school administrators reduced the amount of time they spent on physical education, the changes would not only not improve test scores in subjects like math, English or reading, but would also be bad for health. Moreover, most people claim that the replacement of PE courses by other courses means that other goals of education as cooperation and action have not been achieved (Youth Sport Trust 2018). This means that secondary schools should increase the time of PE or maintain adequate time for PE.

In conclusion, although the cultural background of sports is complex and there are many distractions to explore the relationship between physical activity and academic performance, evidence argued that PE improved AP, even after controlling for gender, body mass index and socioeconomic status. This means that in terms of the relationship between PE and AP, secondary schools should increase the time of PE by providing at least enough time for physical activity such as 60～90 minutes per day.

4. Conclusion

Whether secondary schools should increase or decrease the time of PE classes has become a controversial issue. Educators are confused about whether high school students should be forced to cancel PE because of exam pressure. This paper attempts to explore this issue from different aspects, such as physical health, mental health, and academic performance. With regards to physical health and mental health, it is clear from the evidence that secondary school PE can not only reduce the risk of obesity in students but also enhance the confidence of those who are good at physical education. Although some people point out that the incorrect way of teaching will increase the risk of osteoporosis, and the overeating after PE may make students become fatter, and even PE may make students who are not good at PE feel inferior. However, these adverse effects can be avoided by improving the quality of PE. High-level PE courses will not cause physical and psychological harm, but also can enhance physical strength, and even improve students' psychological sense of achievement and self-confidence. The relationship between PE and academic performance have also been discussed. Some studies have claimed that PE helps improve performance in other subjects. Because sports can improve the reaction ability and memory of teenagers, it enables students to complete learning tasks faster and more accurately. Others showed that there was no definite relationship between physical exercise and AP, because there were many factors besides sports that affect academic performance. However, many studies strongly believe that even after controlling for variables (gender, weight, socioeconomic status), PA still positively affects achievement in other subjects.

Overall, it appears that secondary schools should increase the time of physical education courses because in the long run, organized PE can not only effectively reduce the risk of obesity and develop the habit of sports, but also enhance students' sense of achievement and self-confidence. Moreover, long-term participation in PE can improve students' memory and reaction ability, which is conducive to the improvement of AP. Despite the study of this paper lacks attention to the quality of PE, it seems clear that PE has a positive impact on students' health and AP. The positive effects of PE on health and AP would be even more pronounced if most schools offered quality PE curriculum. This may require the education department to organize training courses for PE teachers and to supervise PE teaching in schools.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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