

A Formal Study on Strategies for Promoting Teenagers' Comprehensive Qualities through Physical Education in the New Era: Taking Track and Field as an Example under the Epidemic Background

Weijia Li^{1,a}, Ying Xu^{1,b}, Donglin Zhou^{2,*}

¹University College London, London, WC1E 6BT, UK

²Loughborough University, Loughborough, LE11 3TU, UK

^adtmvw29@ucl.ac.uk, ^bdtmvxu0@ucl.ac.uk

*Corresponding author: D.Zhou1-24@student.lboro.ac.uk

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Abstract: This study aims to conduct a comprehensive exploration of the strategies for enhancing teenagers' comprehensive qualities through physical education in the new era, with a particular focus on track and field as an example in the context of the epidemic. To achieve this goal, we employ a variety of research methods, including questionnaire surveys, logical analysis and literature review. In the present era, physical education is of great significance for the improvement of teenagers' comprehensive qualities. However, the epidemic has brought about many obstacles to physical education, such as changes in teaching models, variations in student participation and limitations in resources. Track and field teaching shows distinct advantages in promoting the physical and mental health and social adaptability of teenagers. Through questionnaire surveys, we investigate the actual situation of teenagers' engagement in track and field activities and the impact on their comprehensive qualities during the epidemic. Through logical analysis, we analyze the relationship between physical education and teenagers' comprehensive qualities and formulate effective strategies. Additionally, the literature review helps us utilize existing research findings and experiences. This research proposes innovative teaching methods, and measures to increase student participation and optimise teaching resources. Furthermore, we provide examples of successful track and field teaching cases to illustrate the effectiveness of these strategies. In conclusion, this study offers valuable insights and recommendations for the promotion of physical education and the enhancement of teenagers' comprehensive qualities in the post-epidemic era.

1. Introduction

It is important for teenagers to develop comprehensively through physical education in this era. It can not only improve their physical fitness but also cultivate their mental well-being and social

competencies. However, the epidemic has had a significant impact on physical education, which includes the need to reassess and adjust teaching models. In addition, it has also brought about, to some extent, challenges such as fluctuating student participation and resource constraints. Choosing track and field as the focus of this study is of great value as it provides a perspective on promoting teenagers' comprehensive qualities in the post-epidemic era. The major goal is to identify practical strategies to enhance these qualities through physical education, especially in the background of the COVID-19 pandemic. The study aims to explore the connection between physical education and the quality of teenagers. It is researched by using many research methods, such as questionnaires, interviews and case studies to discover innovative teaching methods. This study will also contribute to the knowledge of physical education in the post-epidemic era, providing inspiration and recommendations for teachers and policymakers. By emphasizing the importance of physical education in athletics to promote all aspects of development in adolescents.

2. The Relationship between Physical Education in the New Era and Teenagers' Comprehensive Qualities

2.1. Physical Education and Teenagers' Development in the New Era

In today's society, physical education is growingly significant for the all-round development of teenagers. It not only boosts students' physical fitness but also cultivates their mental health and social skills. Through taking part in diverse sports activities, young people can enhance their physical strength, endurance and flexibility. This can help them easily handle daily challenges and pursue academic success. Furthermore, physical education courses can help them develop a positive self-image, increase self-confidence, and reduce stress and anxiety. By setting and achieving sports goals, they can develop mental toughness, problem-solving skills and decision-making abilities. More significantly, it offers a platform for interacting with peers and learning teamwork. This is essential for building healthy relationships and becoming responsible citizens^[1]. In conclusion, sport plays an integral part in the health development of young people. And we can help them lead healthy and successful lives by highlighting their importance and providing as many opportunities as we can.

2.2. Challenges and Opportunities in the Context of the Epidemic

The epidemic has exerted a profound impact on physical education, which makes it necessary to reevaluate and adjust teaching models. It has presented challenges such as fluctuations in student participation and resource constraints. However, choosing track and field as the focus of this study is highly valuable as it offers a perspective on enhancing teenagers' comprehensive qualities in the post-epidemic era. The primary goal is to identify practical strategies for improving these qualities through physical education, particularly in the context of the epidemic. By making use of research methods like questionnaires, interviews and case studies, we intend to delve into the relationship between physical education and teenagers' qualities and uncover innovative teaching approaches. This study will add to the knowledge base related to physical education in the post-epidemic era, offering insights and suggestions for educators and policymakers.

3. Challenges Faced by Physical Education under the Epidemic Background

3.1. Transformation of Teaching Models

Online teaching undoubtedly presents some limitations, particularly in the context of physical education courses and activities. To adapt to online instruction, traditional physical education

programs may need significant adjustments. For example, contact sports and team sports may need to be replaced or reduced, with a corresponding increase in individual or home-based exercise. However, the lack of face-to-face interaction can somewhat influence the timeliness of teaching and the effectiveness of communication between teachers and students. This can negatively affect the quality of teaching. Additionally, because of the age group of adolescents, they are more likely to be distracted easily. Therefore, online teaching presents a considerable challenge in ensuring that they remain focused on the core content of the program. The inability to provide real-time correction and guidance may lead to improper exercise techniques, potentially resulting in injuries. Monitoring teenagers' progress is also more difficult, as assessing their understanding and engagement in real-time is difficult to implement. In addition, the availability and quality of teaching and learning resources in online environments may be limited, which may affect the breadth and depth of the educational experience for teenagers. The lack of real-time guidance, encouragement, and personalized instruction tailored to individual differences makes it difficult to evaluate learning outcomes and progress, particularly in terms of skill development and physical fitness improvement. At the same time, the transition for teachers is crucial. Some may not yet have mastered the content and methods required for online teaching, which further exacerbates the challenges of instruction.

3.2. Changes in Student Participation

The effects of a pandemic may lead to a decrease in students' motivation to exercise, which in turn reduces their activity levels in physical education classes^[2]. This lack of motivation can be attributed to a number of factors, including limited access to sports facilities, increased uncertainty or anxiety and reduced social interaction. The decrease in social interaction further lowers students' enthusiasm and engagement in physical activities. The family environment also plays a crucial role in shaping students' participation in physical activities. For instance, parents' attitudes toward sports can profoundly influence their children's interest and level of involvement^[6]. Additionally, the availability of exercise facilities at home is equally important. With parents' encouragement, adequate exercise equipment and enough space can help students develop good exercise habits. On the contrary, if there are no exercise facilities at home or if parents don't give enough weight to sports, students are not likely to take part in sports activities. Hence, we should place great emphasis on the influence of the home environment on students' participation in sports and make an effort to create a supportive environment for students to actively engage in sports.

3.3. Resource Constraints

Physical education holds a crucial position in the healthy physical and mental development of young people, but it depends on a variety of related resources. During the pandemic, the shortage of space and equipment resources became a prominent problem. Without proper space and sufficient equipment for use, the chances for young people to take part in various sports activities will be significantly reduced. Moreover, the insufficient number of professional physical education teachers will also influence the quality and effectiveness of physical education for young people. The lack of qualified teaching staff means that students will receive limited individualized attention and guidance, which may have a negative impact on their learning results and on physical education as a whole. Therefore, adequate resource support is of critical importance for student development^[2].

4. Advantages of Track and Field Teaching in Improving Teenagers' Comprehensive Qualities

4.1. Characteristics of Track and Field Sports

Track and field is a fundamental and comprehensive sport that requires the ability of every part of the body and enhances the physical fitness of teenagers. It includes a wide range of activities, including running, jumping, and which focus on different parts of muscle groups and physiological systems. In the aspect of operability, track and field is easier to organize and implement. It doesn't require complicated equipment or specialized facilities and can be conducted on school playgrounds, parks, or open fields. This flexibility makes it easier to organize and conduct these activities and makes sure teenagers get enough chances to participate. Moreover, the variety of track and field enables coaches to customize activities according to specific needs of teenagers and improve the effectiveness of teaching^[4].

4.2. Enhancement of Physical Quality

Track and field help teenagers enhance muscle strength, endurance and flexibility. Specifically, taking part in various track and field activities allows teenagers to engage and develop different muscle groups and improve overall physical performance. In the aspect of improvement of endurance and speed, training in track and field such as long-distance running and sprinting has proven to be beneficial. These activities require teenagers to keep challenging their limits. Over time, endurance and speed will increase gradually.

4.3. Cultivation of Psychological Quality: Fostering Perseverance and Tenacity

Track and field training requires teenagers to possess the perseverance and tenacity to overcome difficulties and challenges. During training, teenagers encounter setbacks and obstacles frequently. But through determination and persistence, they can constantly improve and progress. This process not only builds physical strength but also trains mental resilience and the ability to face bad situations. Moreover, engaging in track and field activities is good for teenagers in reducing stress and anxiety and maintaining a positive mental state^[3]. Exercise can release endorphins, which are natural mood boosters. Teenagers can focus on the present and forget worries, experience a sense of fulfilment and achievement by engaging in track and field activities. Additionally, the social aspect of team sports or group activities in track and field provides a supportive environment, enhances teenagers' sense of belonging and reduces feelings of isolation.

4.4. Promotion of Social Adaptability

Track and field team projects are important in helping teenagers develop teamwork skills and foster team spirit. By engaging in these projects, teenagers learn to collaborate towards the same goals, understand the importance of each member, and develop the ability to communicate and collaborate effectively. Moreover, track and field competitions provide a good platform to cultivate teenagers' sense of honour and competition. By engaging in these competitions, teenagers learn how to strive for excellence, gracefully handle success and failure and develop a healthy sense of competition. This not only enhances their motivation and determination but also helps them learn valuable life lessons about perseverance and sportsmanship, thereby promoting their social adaptability.

5. Physical Education Strategies Based on Track and Field under the Epidemic Background

5.1. Innovative Teaching Methods

5.1.1. Hybrid Athletic Training (Combining Online and Offline Methods)

During the pandemic, PE teachers can combine online and offline teaching methods. For example, teachers can record detailed athletic techniques and movements using segmented teaching methods, allowing students to watch and imitate at their own pace. Video conferencing can be used to explain and demonstrate athletic techniques, such as running, jumping, and throwing. Teachers give instant feedback by video to students to do individual exercises indoors or outdoors. Offline, teachers organize small group outdoor activities and do exercises and technique correction, making sure of pandemic safety protocols.

5.1.2. Enhancing Teaching with Modern Technology

Video analysis software and virtual reality can help students learn correct techniques by watching and simulating the movements of virtual coaches or elite athletes. Moreover, smartphones and wearable devices can provide instant feedback on speed, stride length and heart rate in real time. This data helps students better manage their training speed and plan their exercise effectively and assess their progress. These tools can significantly improve students' understanding of body posture and movement trajectories, making it easier for them to learn effectively.

5.2. Strategies to Increase Student Engagement

5.2.1. Personalized Athletic Training Plans

Customize training plans based on each student's physical fitness, athletic ability and interests. For example, teachers can help them engage in suitable activities according to their speed, endurance, and strength, such as long-distance running, long jump, or shot put. Students can record their training progress by using apps or other online platforms. Wearable devices can be used to track fitness data. Teachers provide progress reports regularly and give feedback, helping students see their improvements and achievements. This method improves student engagement and makes training more targeted and effective.

5.2.2. Designing Engaging Athletic Activities

To attract more students to athletic training, teachers can design a series of fun and engaging activities, such as running challenges, online speed races, fun relays, or family competitions. Activities like a "7-Day Jump Rope Challenge" or a "30-Day Running Challenge" can offer special rewards for completion. Gamification elements, such as virtual tracks or timed races, can be incorporated into the training process to make it more enjoyable. Adding fun and competitive elements helps spark students' interest in participating while fostering teamwork and a sense of collective achievement.

5.2.3. Establishing Incentive Mechanisms

Teachers can use immediate rewards to help students achieve short-term goals and honor-based rewards for long-term goals. They can set up various reward systems, such as "Most Improved," "Best Participation," and "Sportsmanship" awards, to encourage students to participate in athletic training and competitions. Moreover, they can set up a points-based system, which allows students to redeem

prizes and contribute to class rankings after completing daily training tasks. A rewards and achievements platform, such as the school's website or social media, can showcase students' training progress and accomplishments. Additionally, in-person recognition events can be held to publicly acknowledge outstanding students.

5.3. Optimizing Athletic Teaching Resources

5.3.1. Developing Family-Based Athletic Programs

Teachers can design training plans which can be practiced at home, such as jump rope, high knees, indoor sprints, and core strength exercises like planks and sit-ups, as well as flexibility and stretching routines like yoga. These activities can be easily performed with items that are easy to reach, helping students maintain their fitness, muscle elasticity and joint flexibility in a home environment.

5.3.2. Sharing Resources between Schools and Communities

Schools can collaborate with the community to share athletic facilities and equipment^[5]. For example, small training lessons and competitions can be held in community sports fields or parks, ensuring students have ample space to exercise while reducing the strain on school equipment. Schools can also transform existing facilities and arrange the usage of fields flexibly, making them adaptable to various track and field activities, such as sprints, jumps and throws.

5.3.3. Enhancing Training for Athletic Teachers

Provide specialized online training courses for athletic teachers to enhance their ability to conduct athletic instruction during the pandemic. Topics could include how to utilize digital technology for remote teaching, how to design safe and effective training plans, and how to interact and provide feedback via online platforms. These courses will ensure that teachers are well-equipped to meet the demands of physical education in this new context.

6. Case Analysis

6.1. Successful Cases

During the pandemic, numerous schools encountered difficulties due to the limitations of physical activities. In order to tackle these challenges, some schools devised integrated online and offline track and field training programs and achieved outstanding outcomes. The following are instances of schools that successfully upheld students' physical fitness and athletic skills through innovative teaching approaches and technology.

6.1.1. San José State University

During the pandemic, the athletics department of San José State University developed an integrated online and offline track and field training program to deal with the restrictions on in-person activities. The school made use of virtual reality (VR) technology and video analysis software to give students detailed explanations of track and field techniques and simulated training sessions. Students learned technical details online through these resources and then took part in small-scale, in-person training sessions whenever it was possible. Coaches interacted with students regularly through online platforms, providing real-time feedback and adjusting plans according to the student's training data. This model successfully maintained the students' physical fitness, and many students showed significant improvements in speed, endurance, and overall physical condition.

6.1.2. London Academy

In the face of the challenge of complete campus closure during the pandemic, the physical education team of London Academy made a decision to carry out a combined online and offline track and field training program to keep students' fitness levels. The school created an online platform where students could access training video tutorials, take part in real-time race simulations, and follow personalized training plans. Students carried out basic fitness exercises at home, such as skipping rope, short sprints, and core strength training, while recording and sharing their progress on the platform. Every week, the school arranged small-scale in-person training sessions that focused on technical guidance and practical exercises. This approach effectively helped students maintain a good physical condition at home, with noticeable improvements in running speed, endurance and strength. The PE team successfully guided students through online interactions, making this model a successful response to the challenges of the pandemic.

6.1.3. Nanyang Girls' High School

During the pandemic, Nanyang Girls' High School actively pushed forward a mixed physical education curriculum, especially in track and field training. The school gave each student a smartwatch to track their daily exercise data, like the number of steps, heart rate and running speed. PE teachers monitored the students' training data through an online platform and provided personalized feedback and adjustment suggestions. The school also organized online track and field challenges, in which students could complete tasks at home or in their communities and upload the results to compete with their peers. This approach greatly increased students' participation and enthusiasm, resulting in significant improvements in their physical fitness. Data-driven personalized training enabled students to improve their athletic abilities more effectively.

6.1.4. Cary Baptist Grammar School

During the pandemic, Cary Baptist Grammar School sought out new physical education methods to adapt to the situation where students were unable to train on campus. The school established a comprehensive physical education platform that integrated online and offline track and field training. Students accessed the training videos recorded by coaches through a mobile app developed by the school and uploaded their training data via the app. Coaches provided personalized training recommendations based on this data. After online learning, students were encouraged to practice in nearby parks or their own backyards. Many students made significant progress on the platform, particularly in terms of endurance and flexibility. The school reported that this combined online-offline approach was effective during the pandemic and could potentially become a long-term model for physical education in the future.

6.2. Insights

6.2.1. Flexibility in Addressing Challenges and Innovating Teaching Models

Special circumstances such as the pandemic require the education system to be flexible. By integrating online and offline teaching methods, students' learning can continue without interruption while ensuring safety. This highlights the need for continuous innovation in teaching, using various teaching formats and technological tools to address different external challenges.

6.2.2. Personalized and Diverse Educational Strategies

Education should not keep a one-size-fits-all method. Personalized track and field training plans

can be customized to suit students' abilities and interests, assisting each student in reaching their full potential. This implies that educators should concentrate on individual differences and offer customized learning and training plans to enhance student engagement and effectiveness.

6.2.3. Leveraging Technology to Enhance Educational Outcomes

Modern technologies, like video analysis software, virtual reality, and wearable devices, can remarkably improve teaching effectiveness. The application of technology not only assists students in understanding and mastering techniques more intuitively, but also helps them in self-adjustment and improvement through data feedback and analysis. This encourages the integration of modern technology in education to attain more efficient and precise teaching and training.

6.2.4. Increasing Family and Community Involvement

Families and communities have an important role in students' education and training. By creating family-friendly track and field activities and sharing resources with the community, students' physical development can be supported in a wider environment. This underlines that education is not only the responsibility of the school; it also necessitates the active involvement of families and communities to offer comprehensive support for students.

6.2.5. The Importance of Motivation and Reward Mechanisms

Establishing effective motivation and reward mechanisms can significantly enhance student participation and learning motivation. By setting clear goals and providing rewards, students can obtain a sense of accomplishment and recognition, which helps sustain their interest and engagement in training. Educators should acknowledge the importance of psychological motivation and design multi-level incentive systems to support students' long-term development. These cases collectively highlight the significance of innovation, personalization, technology utilization, resource integration, and motivation mechanisms in track and field training. The insights gained from these cases are not only applicable to track and field but can also be extended to broader educational and athletic training contexts. Educators should learn from these insights to improve teaching effectiveness and promote the comprehensive development of students.

7. Conclusion and Outlook

7.1. Research Conclusions

The study highlights that athletic physical education plays a vital role in developing the overall quality of youth during an epidemic. Apparently, sport is very important for promoting the physical, mental and social development of young people. The strategy of improving the comprehensive quality of youth through physical education has shown potential efficacy. Practical examples and data analysis substantiate their positive impact on promoting physical fitness, mental resilience and social adaptability among teenagers. However, the implementation of these strategies requires continuous evaluation and adjustment to maximize their influence on teenagers' overall growth and development. In conclusion, this research offers valuable insights into the significance and effectiveness of physical education in the epidemic context and provides guidance for future efforts to enhance teenagers' comprehensive qualities through track and field and other physical education programs.

7.2. Research Limitations and Future Prospects

This research has some limitations. For example, a small sample size in this study may affect the reliability and generalizability of the findings. In addition, to optimize the teaching effect of track and field, we need to explore more specific teaching methods. Looking to the future, the application of new technologies such as virtual reality and artificial intelligence has great potential to enhance physical education teaching. Integrating multiple disciplines also helps to develop more effective teaching strategies. It is also important to promote lifelong physical education through cooperation between schools, families and communities. In conclusion, although this study provides valuable insights, there is still room for improvement and further exploration to promote the development of physical education and promote the healthy growth of adolescents.

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