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Reconstruction of Adolescent Physical Fitness Monitoring and Physical Education Management System under the Health-First Concept

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Abstract: Focusing on the ineffective supervision and formalized operation of adolescent physical fitness management in the context of global health education reform, this study aims to explore feasible optimization paths for campus physical education management. Adopting document sorting and logical analysis methods, this paper summarizes the practical drawbacks of current student physical detection mechanisms and daily sports teaching administration. The research results indicate that traditional school sports management generally faces problems such as idle health data, disjointed teaching supervision, and imperfect whole-process working mechanisms. This study constructs a set of refined, data-based, and systematic management optimization schemes suitable for adolescent physical education. The reconstructed management framework can effectively connect daily fitness monitoring results with campus teaching arrangements, which is conducive to implementing the health-oriented educational goal in school physical education. This research may provide certain theoretical references and practical ideas for improving the standardized construction of school physical education management.

Keywords: Health-first concept; Adolescents; Physical fitness monitoring; Physical education management

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1. Introduction

1.1. Research background

In recent years, global educational governance has gradually attached importance to the integration of health literacy and school teaching. The “Fit for Life” initiative launched by UNESCO has guided educational institutions in various countries to improve adolescent health supervision systems and standardize daily physical education management [1]. In China, the health-first educational principle has gradually become the core guiding idea for campus physical education reform. Teenagers’ physical condition is an essential basic condition for national talent training and long-term social health development. At present, most domestic schools have initially established regular physical testing mechanisms, but the actual daily

sports management mode remains relatively extensive in most educational scenarios. The disconnection between routine fitness detection and classroom teaching optimization has greatly restricted the continuous improvement of students' physical health literacy.

1.2. Research significance

Campus physical education management is a crucial component of modern educational governance systems. Scientific physical condition monitoring and standardized management mechanisms serve as important guarantees to implement health-oriented educational objectives. Existing domestic studies have achieved certain progress in the fields of fitness testing and sports teaching reform, but few academic results focus on systematic management system optimization under the international health education framework [2]. Therefore, this research has practical significance for improving the current fragmented management status and promoting the standardized and refined development of school physical education.

1.3. Research hypothesis

Combined with practical campus management status and existing academic viewpoints, this study puts forward two tentative research hypotheses. Firstly, the optimized dynamic and refined fitness monitoring mode can effectively improve the formalized defects of traditional student physical detection work. Secondly, the whole-process management mechanism driven by health data can effectively promote the organic integration of health-first educational ideas and daily physical education teaching administration.

2. Theoretical connotation and practical value

2.1. Connotation of health-first concept in physical education

The health-first educational concept regards students' physical and mental harmonious development as the fundamental starting point and goal of school physical education [3]. It corrects the previous educational tendency that excessively emphasizes sports skill training and competitive performance, and highlights the long-term health cultivation value of physical education courses. Under the guidance of this concept, campus sports management work needs to adhere to the student-centered development idea and take the improvement of students' comprehensive physical quality as the core evaluation criterion of teaching effectiveness.

2.2. Functional value of physical fitness monitoring

Physical fitness monitoring acts as a basic and essential technical link in modern campus physical education administration [4]. Standardized and continuous physical detection work can objectively reflect teenagers' physical development rules and potential health risks in the growth process. The collected physical data can provide an objective and reliable decision-making basis for schools to adjust teaching plans and optimize management strategies, and make up for the subjectivity and one-sidedness of traditional empirical sports management modes.

2.3. Practical value of system reconstruction

Under the guidance of international mainstream health education concepts, optimizing and reconstructing the school's physical education management system can narrow the gap between domestic campus sports management and international educational standards [5]. The improved working mode can form a complete

closed-loop management process including data monitoring, problem analysis, scheme adjustment, and effect optimization, which provides new practical directions for the high-quality development of modern school physical education.

3. Current dilemmas of adolescent physical fitness monitoring and management

3.1. Formalized monitoring work and low data utilization efficiency

Although most schools have completed annual student physical testing in accordance with unified national management specifications, most monitoring activities are limited to completing prescribed assessment tasks, showing obvious formalized characteristics [6]. The existing monitoring indicator system is relatively single, lacking dynamic tracking and differentiated detection for different student groups. In terms of data application, most physical health information is only simply sorted and archived after collection, without in-depth statistical analysis and value exploration. The failure to fully apply monitoring data to teaching improvement results in the waste of educational data resources.

3.2. Disconnection between monitoring results and daily teaching management

The separation of fitness detection and teaching arrangement is a common practical problem in current campus physical education management [7]. After completing regular physical assessment every year, few schools adjust teaching contents and training focuses according to the overall physical level of students and individual physical deficiencies. Most physical education courses still adopt unified and fixed teaching modes, ignoring individual physical differences and personalized health needs of students, which makes it difficult to carry out accurate and targeted physical education teaching.

3.3. Imperfect whole-process physical education management mechanism

Restricted by traditional extensive management thinking, current school physical education work pays excessive attention to classroom teaching assessment, while the standardized supervision of students' daily exercise and after-school sports activities is insufficient [8]. A complete whole-process management system covering pre-monitoring situation analysis, in-process targeted guidance, and post-implementation effect evaluation has not been fully established in most schools, which hinders the in-depth implementation of health-first educational concepts in daily campus teaching.

3.4. Insufficient comprehensive ability of physical education management team

The implementation of refined fitness detection and data-based sports management has put forward higher comprehensive requirements for front-line teachers and administrative staff. A number of physical education teachers have solid professional teaching skills, but lack systematic data analysis ability and professional health management literacy. It is difficult for them to formulate targeted teaching optimization schemes and health guidance strategies based on monitoring data, which restricts the overall improvement of school physical education management quality.

4. System reconstruction strategies of fitness monitoring and physical education management

Based on the sorted practical problems and research hypotheses, this study proposes five targeted optimization strategies for system reconstruction.

4.1. Constructing dynamic and refined whole-process monitoring system

Combining the health-first educational principle and international health education standards, schools can appropriately change the traditional single annual detection mode and build a phased, dynamic, and full-coverage physical monitoring mechanism. On the basis of basic physical quality indicators, appropriate auxiliary assessment contents such as daily exercise habits and mental health status can be added to realize all-round supervision of students' physical and mental development. Unified detection standards and operation norms are formulated to ensure the authenticity, accuracy, and effectiveness of monitoring data.

4.2. Establishing data-driven teaching and management linkage mechanism

Schools should actively build a closed-loop working mode integrating data statistics, problem diagnosis, teaching adjustment, and effect feedback. After each round of physical monitoring, teachers summarize the common physical problems of student groups and individual developmental deficiencies. According to the data analysis results, schools adjust curriculum setting and teaching emphasis, increase targeted training for weak physical items, and provide personalized exercise suggestions for students with poor physical fitness, so as to realize effective docking between monitoring data and daily teaching management.

4.3. Improving standardized whole-process physical education management system

Centering on health-oriented educational goals, schools need to further optimize daily physical education management rules. The traditional single skill assessment standard should be improved, and students' physical health improvement effect should be regarded as the core index of teaching evaluation. Schools formulate unified management norms for after-school sports activities to guarantee students' sufficient daily exercise time. Meanwhile, a simple and feasible health risk early warning mechanism is established to conduct timely educational intervention for students with abnormal physical conditions.

4.4. Strengthening professional training of physical education management team

Educational institutions should carry out regular special training for physical education teachers and management personnel, covering fitness data analysis methods, international health education concepts, and refined management skills. Systematic professional learning helps staff master practical methods to apply monitoring data to daily teaching optimization. Schools also appropriately adjust performance assessment standards, take data application ability and students' health improvement effect as important evaluation indicators, so as to mobilize teachers' initiative in health education management.

4.5. Building home-school-community collaborative health management system

The healthy physical development of adolescents cannot rely solely on campus educational supervision. Schools should regularly provide feedback on students' physical monitoring results and scientific exercise suggestions to parents, guiding families to pay attention to children's daily physical exercise habits. Local communities open public sports facilities and organize appropriate adolescent sports and fitness activities,

forming a multi-party collaborative health education pattern of school guidance, family supervision, and community support.

5. Conclusion

5.1. Theoretical value

This study takes the global health education initiative and health-first educational concept as the theoretical basis, and systematically sorts out the internal logical correlation between adolescent fitness monitoring and physical education management. It enriches and expands the theoretical research framework of school physical education governance and provides a relatively new research perspective for the interdisciplinary integration of health education and educational management research.

5.2. Practical value

The systematic optimization strategies proposed in this research can effectively solve common practical problems such as formalized monitoring, idle data resources, and disjointed teaching management in current school physical education work. It helps promote the transformation of campus sports management from traditional empirical extensive management to modern data-based refined management, and effectively enhances the implementation effect of health-first educational concepts in daily physical education teaching.

5.3. Comparison with existing research results

Most previous studies mainly focus on single research perspectives such as fitness monitoring optimization or physical education teaching reform. Few studies integrate international health education initiatives, adolescent physical detection, and whole-process management system construction into a unified research framework. Different from fragmented research in existing literature, this study constructs a systematic and complete management system, which makes up for the deficiency of single-dimensional research in previous academic achievements.

5.4. Research innovation and improvement

This study appropriately integrates the international “Fit for Life” health education initiative with domestic school physical education practice and constructs a set of operable whole-process closed-loop management systems. It realizes the organic combination of dynamic data monitoring, classroom teaching optimization, and multi-subject collaborative management, which expands the research scope and practical application dimension of school physical education management research.

5.5. Existing unsolved problems

This research still has certain limitations. The proposed system reconstruction strategies are mainly theoretical optimization schemes, lacking long-term practical verification and effect tracking in actual campus educational scenarios. In addition, this study does not formulate differentiated management schemes for different school types and age groups, which need further targeted improvement in subsequent research.

5.6. Research suggestions and future prospects

Subsequent research can carry out empirical investigation according to different school scenarios, further

refine differentiated monitoring and management strategies for different student groups. Educational institutions can try to apply this optimized management mode to daily physical education work, and continuously adjust and improve the system according to practical application effects. With the continuous development of global health education, refined, data-based, and systematic physical education management will become the mainstream development trend of adolescent school physical education.

Disclosure statement

The author declares no conflict of interest.

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