



The Management Strategies to Develop Physical Exercise for Secondary School Students in Industrial Zone of Shaanxi Province, The People's Republic of China

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Abstract

Background and Aim: With the development of the economy and society, the urbanization process of industrial areas in Shaanxi Province is accelerating, educational resources are gradually optimized, and various educational reforms are gradually implemented. However, in this process, the physical exercise of secondary school students is gradually neglected, leading to problems such as the decline of students' physical fitness and poor physical quality. This research aims to construct management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

Materials and Methods: The participants in this research can be divided into four groups, which are as follows: (1) 370 students were selected to participate in the questionnaire survey; (2) 7 experts were invited to in-depth interviews; (3) 19 experts were invited to conduct two round Delphi consensus; and (4) 9 experts were invited to discuss and confirm the management strategies. Descriptive statistics, including mean and standard deviation, are utilized to evaluate the questionnaire data. The consensus data was analyzed by using the median and interquartile range, with the criteria for assessment set at a median of ≥ 3.50 and an interquartile range of ≤ 1.50 .

Results: The management strategies to develop physical exercise for secondary school students in an industrial zone of Shaanxi province, the People's Republic of China can be summarized into 8 main factors and 19 sub-factors. 8 main factors are as follows: (1) Start physical exercise in schools; (2) Establish a sports game; (3) Policies to support sports talent; (4) Finding sponsors; (5) Leader to activate the task; (6) Set up a team of teachers; (7) Teaching and learning network; (8) Controlling.

Conclusion: The management strategies were constructed based on 8 core factors and 19 sub-factors. 9 experts already evaluated the content and application of this management strategy. The evaluation score is at the highest level, this is considered to confirm the suitability of this management strategy.

Keywords: Management Strategies; Physical Exercise; Secondary School Student; Shaanxi Province Industrial Zone

Introduction

With the development of the economy and society, the urbanization process of industrial areas in Shaanxi Province is accelerating, educational resources are gradually optimized, and various educational reforms are gradually implemented. However, in this process, the physical exercise of secondary school students is gradually neglected, leading to problems such as the decline of students' physical fitness and poor physical quality. Therefore, it is of great significance to study the physical exercise needs of secondary school students in the industrial zone of Shaanxi Province for the development of their physical health.

First, secondary school students are in a period of physical development, and their physical exercise needs are different from other age groups. Lack of physical exercise will lead to delayed physical development, decreased immunity, and disease susceptibility in students. Secondly, the land use of industrial zone in Shaanxi Province is gradually transforming to urbanization, and the pressure of living and working environment and the increase of chronic diseases in the process of urbanization has a greater impact on the physical health of secondary school students, and the need for physical exercise is more prominent (Song, et al, 2022). Finally, considering the current situation that secondary school students are busy with their studies and under great academic pressure, moderate physical exercise is also important to relieve their psychological pressure and promote their physical health.





In summary, while Shaanxi Province's industrial areas experience accelerated urbanization and improved educational resources, the inadvertent neglect of secondary school students' physical exercise poses significant challenges to their overall health. The unique physical development needs of these students necessitate focused attention to prevent issues like delayed growth and increased vulnerability to diseases. The ongoing urbanization process further intensifies environmental pressures, impacting students' physical health. Given the academic pressures faced by students, incorporating moderate physical exercise becomes crucial for both alleviating psychological stress and enhancing their overall well-being, highlighting the imperative for comprehensive initiatives to address these health concerns.

This research will survey and study the need for physical exercise for secondary school students in China under the new situation, conduct a scientific assessment of the need for physical exercise for secondary school students in China under the new situation, study and analyze the problems to develop the physical exercise model for a secondary school in the industrial zone of Shaanxi China. Therefore, it is necessary to study the physical exercise needs, current situation, and physical health of secondary school students in the industrial zone of Shaanxi Province. This study can help schools and government departments to better understand the physical exercise needs of secondary school students, develop reasonable and effective physical education programs, enrich the content of physical activities, and provide strong support for the physical health protection of secondary school students. Through this research, we can contribute to the promotion of the healthy and sustainable development of physical exercise for secondary school students in China under the new situation.

Objectives

Main objective

To construct the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

Subsidiary objectives

1. To survey the current situation and existing problem of physical exercise of secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.
2. To draft the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.
3. To confirm the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

Literature Review

1. The need for physical exercise for secondary school students

Using the China Journal full-text database as a source, Wu & Fu (2020) retrieved articles on secondary school students' physical education needs during the decade 1998-2007, and after statistical analysis of the relevant content of the literature, they concluded. With time, the physical education needs of secondary school students have become more and more diversified, modernized, and rationalized, and the main physical education awareness of secondary school students has been increasing, these new features of the times have put forward new requirements for university physical education. In the content statistics of secondary school students' physical education needs, to reflect the physical education needs of secondary school students more clearly and concisely, based on respecting the original text of the authors, the various contents were integrated according to their characteristics, inclusion, proximity, and relevance, for example, "Fitness needs" include enhancing physical fitness, promoting health, strengthening physical fitness and preventing diseases, and improving physical quality. "Interaction needs" include making friends, strengthening friendships, social or sexual interactions, etc.; "Recreation needs" include sports and recreation, leisure and entertainment, games, etc.; "Emotion regulation needs" emotion regulation includes physical and mental or emotional regulation, psychological regulation, getting rid of worries, eliminating anxiety, improving low mood, etc.; "life enrichment" includes enriching leisure time, enriching leisure activities, etc.; "hobbies" include satisfying "stress relief" includes relieving catharsis or dissatisfaction, regulating study stress, psychological relief or release, psychological regulation, relaxing body, and mind,





etc.; "sports skills" includes mastering or improving sports skills or abilities, improving techniques, etc." Enhancing motor skills or abilities, improving technique, motivation"; "Coping with exams" includes meeting exam requirements, fear of failure in physical education, improving performance in physical education, etc.; "body shaping and transformation" includes losing weight, changing or beautifying image, transforming image, and transforming "learning needs" includes enhancing or promoting learning efficiency, acquiring knowledge of physical education theory, acquiring knowledge of health and wellness, increasing knowledge, seeking knowledge of physical education, and regulating learning

Wang & Liu (2019) point out that the physical education needs of today's secondary school students include: the need for physical education knowledge, the need for physical fitness, the need for beauty, the need for recreation, the need for lifelong physical education, and the need for competitive sports.

Li, et al (2004) in their study on the sports needs of students in private universities in Shaanxi, showed that 65.3% of students chose "the purpose of participating in physical exercise" as the first purpose, and 58.22% of students chose "promoting health" as the second purpose. This shows that private university students have a rational attitude towards physical education. Their motivation for learning has changed from passing high school exams and meeting standards to their own health needs, and their thinking about physical education is generally realistic. Joy, et. al. (2019) explore how movements contribute to the discursive construction of masculinities in secondary school physical education; specifically, how body movements constitute masculinities. Several reviews have summarized studies on secondary school students' moderate-to-vigorous physical activity (MVPA) in physical education (PE), but no systematic review with semiquantitative assessment has been conducted to specifically identify the correlates of their MVPA.

Xu, et al. (2020) integrate the virtual reality (VR) of information technology into the teaching of a system of linear equations in three unknowns in high school mathematics and to explore the learning motivation and effectiveness of students after digital teaching. Constructing the primary, junior high, and high school integrated physical education curriculum teaching content system, hoping to provide certain theoretical support for Chinese primary and secondary school physical education and health courses so that physical education could become an important position for young people to civilize their spirit and savage their physique and provide help for the early realization of sports power and healthy China.

2. Secondary school students need physical education knowledge

Gong & Xu (2003) study shows that secondary school students have a positive attitude toward the need for physical education in the following areas: health knowledge (health care, physical education methods, hygiene and health, physical education evaluation, etc.), physiology (respiratory system, digestive system, circulatory system, nervous system, energy expenditure, muscle function, etc.), basic knowledge of physical education (national defense education, sexual physiology, sexual psychology, sports health) and sports ethics. Information on aspects of emotional life is also urgently needed.

Li (2010) found that the higher the literacy level of female secondary school students, the more pronounced their sporting needs should be, indicating an improvement in national quality and reflecting social progress. The research study found that the sports need of today's female secondary school students is characterized by the following: self-awareness, the pursuit of physical fitness, fitness, the importance of improving their own sports quality, concern for social progress and national quality improvement, the pursuit of practicality and the pursuit of good teachers. 49% of the girls believe that extra-curricular sports lack good teachers, 6.5% believe that a system of allowing girls to choose their PE teachers for lessons could be piloted, and 50.5% believe that the quality of PE teachers should improve the quality of physical education teachers. 50.5% of the girls think that the quality of physical education teachers should be improved along with the quality of students and that girls in colleges and universities now have a healthy demand for physical education and want good teachers to improve their physical education.

3. Factors that constrain the realization of secondary school students' physical exercise needs

Through a study of the physical education awareness, attitudes, and interests of 4,000 secondary school students in ten key institutions in Hebei Province, as well as a study and analysis of the physical education programmers in these schools in recent years, Han & Li (2002) found that the current physical education reform in colleges and universities is still far from being able to meet the needs of secondary school students. The analysis of the content of physical education in colleges, the adoption of teaching materials, students' interests and attitudes towards physical education, and the main reasons for the





opposition between physical education and students' physical education needs revealed that physical education in colleges is opposed to students' physical education needs.

The selection of PE teaching materials is too traditional, and the curriculum is less practical and adaptable; the teaching philosophy lags social development and the level of people's understanding of PE. Physical education teaching methods lag research in teaching theory and teaching is too rigid; there is insufficient understanding of secondary school students' psychology and research into psychology teaching.

According to Gong & Xu (2003), the main reasons for the gap between PE teaching and the needs of secondary school students are the choice of PE teaching materials is too traditional and the curriculum is not sufficiently scientific, practical, and adaptable. The teaching philosophy has not been sufficiently updated. Physical education teaching methods and resources are rather boring and not innovative. There is insufficient research into theories of physical education and insufficient data and information collection. There is insufficient research into understanding and guiding the psychology of secondary school students. Students are too homogeneous and undifferentiated in terms of their level of physical examination, resulting in poor students being afraid and wanting to learn but not daring to do so, and excellent students not being sufficiently motivated to learn. The public academic physical education system is not conducive to developing a lifelong awareness of physical activity among students. Yan & Dong (2020) point out that the current physical education curriculum in China's general universities has not been significantly reformed compared to that of secondary schools, and even follows the curriculum of primary and secondary schools, only in an upgraded order. Side push-ups and squat jumps, which have been taught since secondary school, are still compulsory in universities. Rigid classroom teaching and few physical education classes frustrate secondary school students, and only extra-curricular physical activities can bring about a small change.

4. Management Strategy

Management Strategy involves developing and implementing plans to help an organization achieve its goals and objectives. This process can include formulating strategy, planning organizational structure and resource allocation, leading change initiatives, and controlling processes and resources.

Strategic planning involves identifying business challenges, choosing the best strategy, monitoring progress, and then making adjustments to the executed strategy to improve performance. Tools like SWOT (strengths, weaknesses, opportunities, and threats) analysis are used to assess where opportunities and threats lie between the organization, its competition, and the overall market. (Andrews, 1987) Strategic management happens at broader levels like organization-wide leadership, but it can also be implemented at a department or team level. Moreover, the strategic management process helps an organization's leadership plan for its future goals. Setting a roadmap and actionable plan ensures that employees and leaders know where they're going and how to get there in the most efficient, cost-effective manner. It is a work in progress, so strategic plans should continuously be evaluated and adjusted as the market outlook changes.

There are two main approaches to strategic management: prescriptive and descriptive. A prescriptive approach to strategic management focuses on how strategies should be developed, while a descriptive approach focuses on how strategies should be put into practice. The prescriptive model is more top-down, based on SWOT analysis. The descriptive model is more guided by experimenting with different methods to find solutions and learning from experience. It applies Agile methodology to strategic management (Mintzberg, et al, 1998).

Conceptual Framework

The conceptual framework for this research is as follows:



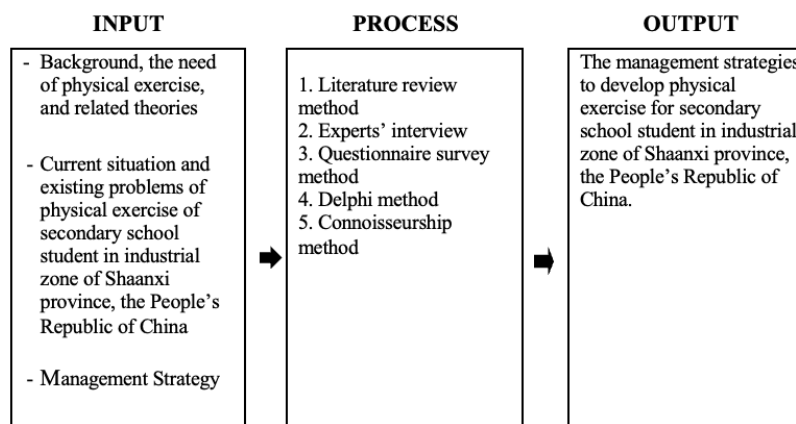


Figure 1 Conceptual framework

Methodology

1. Research Tools

In this research, the research tools are as follows: (1) Questionnaire for student, the IOC value for student's questionnaire is 0.87; (2) Interviewing form; (3) Questionnaire for the Delphi method, the IOC value for Delphi's questionnaire is 0.89; (4) Evaluation form for Connoisseurship.

2. Population and Sample

Population specification and size

In this study, 5,000 students from secondary schools in five provinces and cities in China namely, Xi'an Gaoxin No.1 Secondary School, Weinan Huazhou No.3 Secondary School, Xianyang No.2 Secondary School, Baoji No.3 Secondary School and Shangluo No. 1 Secondary School were used as the subjects of the study. The number of students in each school is as follows:

- 1) Xi'an Gaoxin no. 1 secondary school has 1,215 students
- 2) Weinan Huazhou no. 3 secondary schools have 948 students
- 3) Xianyang No. 2 Secondary School have 1,172 students
- 4) Baoji No. 3 Secondary School have 864 students
- 5) Shangluo No. 1 Secondary School has 801 students

Sample

A sample of 370 students was selected from a population of 5,000 students by using the Taro Yamane method, ensuring that the sampling error remains within the 95% confidence level. Through stratified random sampling method, the number of students in each school can be divided as follows:

- 1) Xi'an Gaoxin no. 1 secondary school 90 students
- 2) Weinan Huazhou no. 3 secondary schools 70 students
- 3) Xianyang No. 2 Secondary School have 87 students
- 4) Baoji No. 3 Secondary School 64 students
- 5) Shangluo No. 1 Secondary School 59 students

Research Participation

Expert for Experts' interview

7 experts specializing in physical exercise, physical education, and relevant administrators were selected by purposive sampling method. They were interviewed in-depth to draft the management strategies framework to develop physical exercise for secondary school students in the industrial zone.

Expert for Delphi method



19 experts, including physical education teachers and relevant administrators, conducted a two-round Delphi study aimed at discussing and constructing the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China. 19 experts were selected through the purposive sampling method.

Expert in the Connoisseurship method

9 experts related to physical exercise, physical education, and relevant administrators conducted connoisseurship to discuss and confirm the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China. 9 experts were selected through the purposive sampling method.

3. Data Collection

3.1. The questionnaire survey was conducted by 370 students from secondary schools in five cities in Shaanxi China namely, Xi'an Gaoxin No.1 Secondary School, Weinan Huazhou No.3 Secondary School, Xianyang No.2 Secondary School, Baoji No.3 Secondary School and Shangluo No. 1 Secondary School, to study the secondary school students' physical exercise situation.

In distributing questionnaires, questionnaires will be distributed through online channels by creating questionnaires through the "Questionnaire Star Questionnaire System", the questionnaires will be distributed to students to answer and put back for data analysis.

3.2. 7 experts were consulted through face-to-face interviews to discuss the current situation of secondary school students' physical exercise.

3.3. Drafting the management strategies framework to develop physical exercise for secondary school students in the industrial zone of Shaanxi China.

3.4. 19 experts conduct two rounds of Delphi consensus to discuss and construct the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi China.

3.5. 9 experts conducted connoisseurship to discuss and confirm the constructed management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi China.

4. Data Analysis

Utilize software package for the analysis of data by using the following statistics:

4.1. Descriptive statistical methods, including calculating the mean and standard deviation, are utilized to analyze the data collected through questionnaires.

4.2. Descriptive statistics, namely median and interquartile range, were employed to analyze the consensus data. The analysis criteria included a median equal to or greater than 3.50 and an interquartile range equal to or less than 1.50.

4.3. Evaluate the content validity of the questionnaire using the Indexes of Items of Objective Congruence (IOC), where the IOC value for the student's questionnaire is 0.87, and the IOC value for Delphi's questionnaire is 0.89.

4.4. When assessing the average scores obtained from the information provided by experts, the researcher utilized the Likert scale to determine the average score for each measure. The meanings of 5 scale evaluation are 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The scoring criteria are outlined below (Best, 1977).

Average score range

1.00 - 1.79

1.80 - 2.59

2.60 - 3.39

3.40 - 4.19

4.20 - 5.00

Meaning

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree





Results

1. Find out the current situation of the physical exercise of secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

A total of 370 students from five ordinary secondary schools were collected through the questionnaire survey method. The questionnaire was sent to the following 370 students to collect data about the current situation of the physical exercise of secondary school students in the industrial zone of Shaanxi province, China. According to the collected data, the data was analyzed, and the following conclusions and findings were drawn as follows:

Table 1 The questionnaire survey results on the current situation of physical exercise for secondary school in the industrial zone of Shaanxi China

Questionnaire Items	Total Score		Result
	\bar{x}	S.D.	
1. You hope that the school's teaching can support you in learning and practicing physical exercise in your spare time	4.09	1.16	Agree
2. You spend one hour a day studying or participating in physical exercise	2.99	0.65	Neutral
3. Do you think your school's teaching skills are very good	3.90	0.82	Agree
4. Do you think teaching can stimulate your enthusiasm for learning and participating in physical exercise	4.73	0.57	Strongly Agree
5. Your teacher has applied many methods and techniques in the teaching process	2.14	1.44	Disagree
6. You actively participate in the classroom and physical exercise	3.12	0.83	Neutral
7. Are you willing to participate in various sports competitions and activities organized by the school	4.33	0.76	Strongly Agree
8. You highly appreciate the techniques and methods taught by the teacher	4.60	0.62	Strongly Agree
9. The methods taught by the teacher can make it easier for you to understand and master sports techniques	4.32	0.72	Strongly Agree
10. Are you willing to receive guidance and improvement suggestions from teachers	4.72	0.54	Strongly Agree
11. You participate in physical exercise in your spare time	2.11	0.71	Disagree
12. You participate in at least two school or community-organized sports competitions and exercises per week	2.14	0.57	Disagree
13. You engage in physical exercise outside of school or on public sports fields	4.09	0.79	Agree
14. Do you think the school's sports equipment and sports field are enough	2.69	0.75	Neutral
15. Do you think the school's sports facilities are enough	2.61	0.69	Neutral
16. Do you think complete sports facilities can stimulate your willingness to participate	4.38	0.73	Strongly Agree
17. Do you think the school's sports field has high standards and quality	3.24	0.81	Neutral
18. Do you think the school sports field can meet your requirements for playing and practicing	3.58	0.65	Agree





Questionnaire Items	Total Score		Result
	\bar{x}	S.D.	
19. Do you think the school's sports field is well-maintained	2.94	0.68	Neutral
20. Your school's sports field is regularly cleaned, repaired, and maintained	2.85	0.78	Neutral
21. Do you think complete maintenance of sports venues has a positive impact on your sports activities	4.55	0.62	Strongly Agree

Through the above data analysis, we can see that the secondary school students in the industrial zone of Shaanxi province have certain needs for the development of physical exercise. This can be seen from (1) question 2 “You spend one hour a day studying or participating in physical exercise”, $\bar{x} = 2.99$, and the result of this question was “Neutral”; (2) question 11 “You participate in physical exercise in your spare time”, $\bar{x} = 2.11$ and the result of this question was “Disagree”; and (3) question 12 “You participate in at least two schools or community organized sports competitions and exercises per week”, $\bar{x} = 2.14$ and the result of this question was “Disagree”.

2. Expert interview to gather information about the physical exercise of secondary school students and to construct the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People’s Republic of China.

The outcomes of expert interviews suggest that to meet the needs of physical exercise development of secondary school students in the industrial zone of Shaanxi province, the respondents suggested that schools actively promote small sports events. By promoting sports events, schools can provide students with more opportunities for physical exercise and promote the improvement of their overall quality. Therefore, for the development of the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People’s Republic of China should be constructed based on the above data and suggestions such as starting physical exercise in schools, establishing a sports game, finding sponsors, set up a team of teachers. By integrating these strategies, the management strategies to develop physical exercise for secondary school students can be designed to be adaptable, ensuring it remains relevant and effective over the long term, despite potential changes in personnel or external factors. It ensures that various aspects of the management strategies are well-planned, organized, led, and controlled, creating a comprehensive framework for effective management.

3. Delphi Method survey results

Following the completion of data collection through questionnaire surveys and expert interviews, a Delphi method survey was implemented. 19 experts engaged in two rounds of Delphi consensus to formulate the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People’s Republic of China.

3.1. First round of Delphi results

The questionnaires encompass 25 factors which come from the 8 fundamental principles, namely (1) Start the physical exercise in schools; (2) Establish a sports game; (3) Policies to support sports talent; (4) Finding sponsors; (5) Leader to activate the task; (6) Set up a team of teachers; (7) Teaching and learning network; and (8) Controlling. Subsequently, these questionnaires were disseminated to all 19 experts for evaluation, and upon completion, they were collected for subsequent data analysis.

Descriptive statistics, specifically median and interquartile range, were employed to analyze the consensus data. The criteria set for analysis were a median of ≥ 3.50 and an interquartile range of ≤ 1.50 .





Table 2 First round of Delphi results

No	Factors related to developing the management strategies	Mdn.	IQR	Result
(1) Start physical exercise in schools				
1	Promote physical exercise in schools as a pioneer sport	4.73	0.00	Retained
2	Set up a sports club at school	4.36	1.00	Retained
3	Provide after-school support	4.89	0.00	Retained
4	Organize competitions	5.00	0.00	Retained
(2) Establish a sports game				
1	Establish a sports game once a year	5.00	0.00	Retained
2	Establish an open platform for physical exercise	4.47	1.00	Retained
3	Set up physical exercise programs in the curriculum and extracurricular activities.	4.94	0.00	Retained
(3) Policies to support sports talent				
1	Develop policies to support sports talents	4.94	0.00	Retained
2	Provide support and training opportunities for students with potential	4.89	0.00	Retained
3	Actively supports intramural sports	5.00	0.00	Retained
(4) Finding a sponsors				
1	Find support from sponsors to provide funding	4.94	0.00	Retained
2	Find support from sponsors to provide resources for sports events	4.89	0.00	Retained
(5) Leader to activate the task				
1	Select a leader with leadership to be responsible for activating the physical exercise task	4.94	0.00	Retained
2	Hold a meeting to activate the physical exercise task	4.84	0.00	Retained
3	Invite School administration teachers and community sports leaders to negotiate	4.89	0.00	Retained
4	Build a network to coordinate the execution of the physical exercise task	4.89	0.00	Retained
(6) Set up a team of teachers				
1	Set up a team of professional teachers	4.94	0.00	Retained
2	Establish a teaching and learning network	5.00	0.00	Retained
(7) Teaching and learning network				
1	Develop physical exercise training plans	5.00	0.00	Retained
2	Develop and train teachers in sports teaching	4.94	0.00	Retained
(8) Controlling				
1	Set up a team to monitor and track the designated physical exercise activities	4.31	1.00	Retained
2	Management through good governance policies	4.84	0.00	Retained
3	Make annual summary regularly, summarize the achievements and problems of various physical exercise activities	5.00	0.00	Retained
4	Divide the meeting into a consensus on progress, issues, and future tasks	5.00	0.00	Retained
5	Solve problems promptly and negotiate the future direction	5.00	0.00	Retained





3.2. Second round of Delphi results

Following the first round of the Delphi method, most experts generally endorsed the details of the management strategies. However, to affirm these opinions, the researcher distributed a second-round questionnaire to the experts, providing them with the consensus data and the researcher's decisions from the first round. The second round of Delphi results are as follows:

Table 3 Second round of Delphi results

No	Factors related to developing the management strategies	Mdn.	IQR	Result
(1) Start physical exercise in schools				
1	Promote physical exercise in schools as a pioneer sport*	4.94	0.00	Retained
2	Set up a sports club at school	4.36	1.00	Retained
3	Provide after-school support	4.89	0.00	Retained
4	Organize competitions	5.00	0.00	Retained
(2) Establish a sports game				
1	Establish a sports game once a year	5.00	0.00	Retained
2	Establish an open platform for physical exercise*	4.73	0.50	Retained
3	Set up physical exercise programs in the curriculum and extracurricular activities*	5.00	0.00	Retained
(3) Policies to support sports talent				
1	Develop policies to support sports talents*	5.00	0.00	Retained
2	Provide support and training opportunities for students with potential	4.89	0.00	Retained
3	Actively supports intramural sports	5.00	0.00	Retained
(4) Finding a sponsors				
1	Find support from sponsors to provide funding	4.94	0.00	Retained
2	Find support from sponsors to provide resources for sports events	4.98	0.00	Retained
(5) Leader to activate the task				
1	Select a leader with leadership to be responsible for activating the physical exercise task*	5.00	0.00	Retained
2	Hold a meeting to activate the physical exercise task	4.84	0.00	Retained
3	Invite School administration teachers and community sports leaders to negotiate	4.89	0.00	Retained
4	Build a network to coordinate the execution of the physical exercise task	4.89	0.00	Retained
(6) Set up a team of teachers				
1	Set up a team of professional teachers	4.94	0.00	Retained
2	Establish a teaching and learning network	5.00	0.00	Retained
(7) Teaching and learning network				
1	Develop physical exercise training plans	5.00	0.00	Retained
2	Develop and train teachers in sports teaching	4.94	0.00	Retained
(8) Controlling				
1	Set up a team to monitor and track the designated physical exercise activities*	4.89	0.00	Retained
2	Management through good governance policies	4.84	0.00	Retained





No	Factors related to developing the management strategies	Mdn.	IQR	Result
3	Make annual summary regularly, summarize the achievements and problems of various physical exercise activities	5.00	0.00	Retained
4	Divide the meeting into a consensus on progress, issues, and future tasks	5.00	0.00	Retained
5	Solve problems promptly and negotiate the future direction	5.00	0.00	Retained

Table 3 highlights that all items met the established criteria of $Mdn. \geq 3.50$ and $IQR \leq 1.50$. Nevertheless, certain aspects showed a more positive change, with the median (Mdn) increasing on the following issues: (1) Promote physical exercise in schools as a pioneer sport. (2) Establish an open platform for physical exercise. (3) Set up physical exercise programs in the curriculum and extracurricular activities. (4) Develop policies to support sports talents. (5) Select a leader with leadership to be responsible for activating the physical exercise task. And (6) Set up a team to monitor and track the designated physical exercise activities. According to the results of the two rounds of the Delphi method, all items were within the criteria of $Mdn. \geq 3.50$ and $IQR \leq 1.50$. Therefore, it can be concluded that all items were accepted as important issues and can be put into the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

4. Confirmation of the development of the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China, by using the Connoisseurship method

To ensure the contentment, effectiveness, and applicability of the proposed physical exercise model, the researcher organized a connoisseurship panel. This panel comprised 9 experts specializing in physical exercise, physical education, and relevant administration. They were invited to engage in discussions aimed at validating the feasibility and soundness of developing the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China.

After conducting connoisseurship, the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China consisting of a total of 25 factors, can be summarized and re-categorized a total of 19 factors as follows:

4.1 Start physical exercise in schools; (1) Promote physical exercise in schools as a pioneer sport for beginners and a sport for skilled students. (2) Set up a sports club at school and inspire community leaders to set up a club in the community. (3) Provide after-school support, train students, organize competitions regularly, and motivate students to participate in physical exercise

4.2 Establish a sports game; (1) Establish a sports game once a year as a sports competition activity between schools. (2) Promote the establishment of an open platform for physical exercise in the Shaanxi industrial zone. (3) Cooperate with schools to set up physical exercise programs in the curriculum and extracurricular activities. (4) Prepare physical exercise promotion for schools and communities.

4.3 Policies to support sports talent: (1) The school develops policies to support sports talents and provides support and training opportunities for students with potential. (2) The school actively supports intramural sports and promotes them to the community.

4.4 Finding sponsors: (1) Find support from sponsors to provide funding and resources for sports events in the school network

4.5 Leader to activate the task: (1) Select a leader with leadership and passion to be responsible for activating the physical exercise task. (2) Hold a meeting, invite school administration teachers and community sports leaders to negotiate, and set up a team to activate the physical exercise task. (3) Build a network to coordinate the execution of the physical exercise task

4.6 Set up a team of teachers: Set up a team of professional teachers, carry out sports teaching plan activities, and establish a teaching and learning network

4.7 Teaching and Learning Network: Develop physical exercise training plans and train teachers in sports teaching





4.8 Controlling

1. Set up a team to monitor and track the designated physical exercise activities to ensure the smooth implementation of the plan

2. Management through good governance policies to ensure the regulated and fair promotion of physical exercise activities

3. Make annual summary regularly, summarize the achievements and problems of various physical exercise activities, and propose further improvement measures

4. Divide the meeting into a consensus on progress, issues, and future tasks, solve problems promptly, and negotiate the future direction.

9 experts agree that this management strategy contains appropriate and quality content, which from the evaluation results of all 19 factors of management strategies are at the highest level. This management strategy to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China is suitable for use.

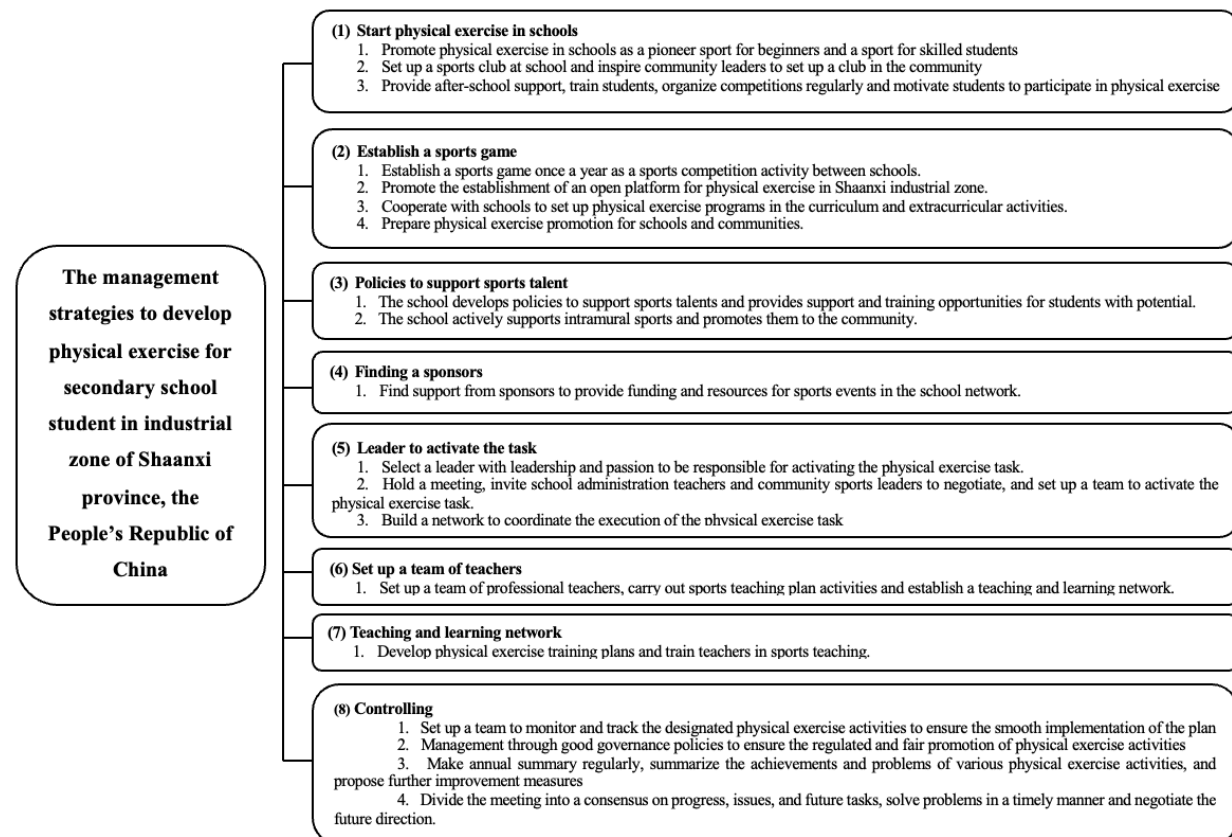


Figure 2 The management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China

Conclusion

The management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China was constructed based on 8 core factors and 19 sub-factors, 8 core factors namely: (1) Start the physical exercise in schools; (2) Establish a sports game; (3) Policies to support sports talent; (4) Finding sponsors; (5) Leader to activate the task; (6) Set up a team of teachers; (7) Teaching and learning network; and (8) Controlling. 9 experts already evaluated the





content and application of these management strategies, this is considered to confirm the suitability of these management strategies.

Therefore, in the development of the management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China, we need to pay attention to the diversified demands of secondary school students for physical exercise, provide high-quality sports facilities and educational resources, and pay attention to meet the different needs of secondary school students of different ages, genders, interests, and hobbies.

Discussion

In this research, the researcher conducted an in-depth study on the development of management strategies to develop physical exercise for secondary school students in the industrial zone of Shaanxi province, the People's Republic of China, and obtained some important findings. The research findings are as follows:

Research results showed that secondary school students' demand for physical exercise is diversified and individual. They hope to enhance their physical fitness and health through physical exercise but also have a strong interest in watching and participating in sports events and performances. Corresponds to Joy, et. al. (2019) was to explore how movements contribute to the discursive construction of masculinities in secondary school physical education; specifically, how body movements constitute masculinities. Several reviews have summarized studies on secondary school students' moderate-to-vigorous physical activity (MVPA) in physical education (PE). In addition, secondary school students also hope to improve their sports skills and understand the importance of sports by learning sports knowledge. The diversity and individuation of these needs require us to fully consider the different needs of secondary school students when making sports development plans and providing diversified and personalized sports courses and activities. Corresponds to Xu, et al., (2020) provide a certain theoretical support for Chinese primary and secondary school physical exercise and health courses so that physical exercise could become an important position for young people to civilize their spirit and savage their physique and provide help the early realization of sports power and healthy China.

Recommendation

Policy recommendation

1. Provide quality sports facilities and resources. To promote the healthy physical and mental development of teenagers, the development of physical exercise in secondary school is very important. By providing high-quality sports facilities and resources, the development level of physical exercise in secondary school can be effectively improved.

2. Strengthen the cooperation and support between family and school. It is recommended that parents should actively participate in their children's physical exercise activities, pay attention to their physical exercise performance, and provide necessary support and encouragement. At the same time, families should maintain close communication and cooperation with schools to jointly promote students' physical exercise development.

Practice recommendation

1. Provide a variety of sports courses and activities. Schools should provide diversified physical exercise activities according to the interests and needs of secondary school students.

2. Provide physical exercise programs for different ages and interests. Schools should provide physical exercise programs suitable for different ages according to the age characteristics and development needs of secondary school students.

Further research recommendation

1. Explore the barriers that hinder the successful implementation of physical exercise programs and identify factors that facilitate student participation





2. Investigate the effectiveness of current management strategies in promoting physical exercise among secondary school students.

3. Investigate the potential of integrating technology, such as fitness apps, wearables, or online platforms, to enhance and monitor physical exercise programs.

4. Explore opportunities for collaboration between educational institutions, healthcare providers, and local government agencies to create comprehensive and sustainable physical exercise programs.

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