

Influencing Factors of School Physical Education Policy Implementation Based on AHP

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Objectives: AHP (Analytic Hierarchy Process) is used to analyze the influencing factors of school physical education policy implementation. **Methods:** Based on the established hierarchical structure model of influencing factors of school physical education policy implementation, the importance of indicators in each level is compared in pairs, the judgment matrix is established step by step, the relative importance order weight of each level element is calculated, and the consistency test is carried out, and then the ranking of each level and the general ranking are obtained. **Results:** The results show that the principal, as the first responsible person for the implementation of school sports policy, plays a directional decisive role in the implementation of school sports policy. Organizational mechanism and funding guarantee factors are necessary conditions for the implementation of school sports policy, and school sports policy factors are a powerful driving force for the implementation of school sports policy. **Conclusion:** AHP provides theoretical reference for better understanding the influencing factors of school physical education policy implementation and putting forward corresponding intervention measures.

Keywords: School physical education policy; Execution; Influencing factors; Analytic hierarchy process

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The general office of the CPC Central Committee and the general office of the State Council "Opinions on Comprehensively Strengthening and Improving School Physical Education in the New Era" is following the Ministry of Education, After "Opinions on Deeping the Integration of Sports and Education to Promote the Healthy Development of Teenagers", the State Sports General Administration once again put school physical education and all-round development of teenagers in a more prominent position. In fact, from Document No.7 of the Central Committee in 2007, By 2016, "Opinions on Strengthening School Physical Education to Promote the All-Round Development of Students' Physical and Mental Health", Opinions on comprehensively strengt

hening and improving school physical education in the new era by 2020. in the past 13 years, the central government and the state have paid great attention to school physical education and the all-round development of teenagers. However, in 2014, the Ministry of Education conducted spot checks and rechecks on the test data reported by schools at all levels in China, and found that the consistency ratio between the spot checks and the reported data was 38.6% in primary schools, 23% in junior high schools, 20.2% in senior high schools and only 14.1% in universities. At the same time, in October, 2020, the author found in an interview survey of more than 300 freshmen that only 1/10 of the students were able to carry out complete physical education class teaching in accordance with the regulations in senior high school, the school physical education class was in

name only under the pressure of exam-oriented education, and the school physical education work was in a dilemma of many calls, few actions and difficult implementation for a long time ¹, and the implementation effect of school physical education policy was not optimistic.

Based on the relevant research results of school sports policy implementation and its influencing factors, it is not difficult to find that some scholars have pointed out from the perspective of policy implementation process that the restrictive factors existing in the policy itself, the weak governance structure in the process of policy operation, the "short-sightedness" and "self-interest" tendency of target group's interest selection, and the pursuit of impetuous and quick success in education are all important constraints on the implementation of our school sports policy ². Some scholars take the implementation of a school sports policy as the research object, and make a concrete analysis of the influencing factors, and draw the conclusion that the factors affecting the development of sunshine sports in colleges and universities can be divided into policy implementation subject factors, policy implementation target group factors, policy resources and guarantee factors ³. Generally speaking, the current research on the influencing factors of school physical education policy implementation is mainly qualitative research. It is worth noting that among the many factors affecting school physical education policy implementation, the influencing ratio among the executing subject, executing organization, executing resources, executing environment and executing effect is different. How to find the appropriate conversion ratio among many factors is the key. However, in the practical research, the main research focuses on the problems and current situation of school physical education policy implementation, and lacks the research on the evaluation system of influencing factors of school physical education policy implementation from theory to practice. With the development of computer technology, AHP provides an effective analytical means for scholars to make quantitative analysis and decision on qualitative problems. The scholars used AHP to analyze the influencing factors of uncivilized tourism behavior ⁴,

the influencing factors of intelligent garbage sorting and recycling ⁵, and the risk assessment of the implementation ability of natural scientific research projects ⁶, and achieved satisfactory results, which also provided a useful reference for further research on the influencing factors of school sports policy implementation. Based on this, AHP is used to analyze the influencing factors of school physical education policy implementation, and find out the relationship between the influencing factors, in order to better understand the influencing factors of school physical education policy implementation, and put forward corresponding intervention measures to better promote the effective implementation of school physical education policy.

METHODS

Analytic Hierarchy Process

Analytic Hierarchy Process (AHP) is a representative method of subjective weighting method for quantitative analysis of qualitative problems. It was put forward by T.L.Saaty, a professor at the University of Pittsburgh in the mid-1970s. Its basic idea is to decompose a complex problem into its constituent factors, and to group these factors according to the dominant relationship, thus forming an orderly hierarchical structure. Finally, the problem boils down to the determination of the relative importance weight of the lowest level (the scheme and measures for joint decision-making, etc.) relative to the highest level (the overall goal) or the arrangement of the relative merits and demerits ⁷⁻⁹.

Research Steps

Constructing hierarchy based on the basic relationship of evaluation index system can divide complicated problems into multiple sub-elements, and divide them into multiple levels by using the mutual influence relationship between elements. Each level of indicators and different elements will dominate the corresponding lower-level elements, thus forming a hierarchical structure composed of "general target layer+several sub-criteria layers".

Judging the element values can effectively analyze the importance of different factors. Under normal circumstances, Sadie's 1-9 scale method

will be used to design the importance grade table, as shown in Table 1. Different elements at each level will be compared according to their importance, so as to build a judgment matrix. The judgment matrix is based on the elements of the upper level, which makes the importance of

related elements in the level be compared and analyzed, and evaluates the level by combining the importance in pairs, thus realizing the transformation between qualitative research and quantitative research.

Table 1
Relative Importance Grade Table

Scale	Meaning	Assignment
1	Compared with the two elements, they are equally important	1
3	Compared with the two elements, the former is slightly more important than the latter	3
5	Compared with the two elements, the former is more important than the latter	5
7	Compared with the two elements, the former is more important than the latter	7
9	Compared with the two elements, the former is more important than the latter	9
2,4,6,8	Intermediate number of adjacent grades	2,4,6,8
Reciprocal	Compared with the two elements, the latter is more important than the former	Reciprocal

Based on Table 1, the specific scores are judged through pairwise comparative analysis, which can

be used as the basis of judgment matrix table, as shown in Table 2.

Table 2
Judgment Matrix Table

Bk	C1	C2	...	Cj
C1	C11	C12	...	C1j
C2	C21	C22	...	C2n
...
Ci	Cn1	Cn2	...	Cij

Calculate the n -th root of the scale value product of each row of the judgment matrix, the formula is: $\bar{W} = \sqrt[n]{Mi}$ ($i=1,2,\Lambda,n$); The vector

$\bar{w} = [\bar{w}_1, \bar{w}_2, \bar{w}_3, \dots, \bar{w}_n]^T$ is normalized, $w_i = \frac{\bar{w}_i}{\sum_{j=1}^n \bar{w}_j}$, and

the value (weight) of the feature vector $W = [w_1, w_2, \dots, w_n]^T$ can be obtained. The maximum characteristic root $\lambda_{\max} = \sum_{i=1}^n \frac{(AW)_i}{n w_i}$, of the judgment matrix is calculated, Among them, A—Judgment matrix, W—Corresponding feature vector. Carry out consistency test and

calculate consistency index $CI = \frac{\lambda_{\max} - n}{n - 1}$. With the increase of CI value, it can be judged that the consistency of matrix deviation will also increase; On the contrary, if the value of CI is smaller (close to 0), the consistency of judgment matrix is more significant.

Based on the order of judgment matrix n , the corresponding average random consistency index RI is found. Combined with the judgment matrix of order 1-9, the obtained values are shown in Table 3.

Table 3
Average Random Consistency Index

Order number	1	2	3	4	5	6	7	8	9
RI	0.00	0.00	0.52	0.90	1.12	1.24	1.32	1.41	1.45

Calculate the random consistency ratio: if the order is above 2, the consistency index CI of the judgment matrix and the average random consistency index RI will keep the consistency ratio, which can be expressed by formula $CR = \frac{CI}{RI}$. If $CR \leq 0.10$, the judgment matrix has satisfactory consistency; otherwise, it is necessary to continuously adjust the judgment matrix to keep satisfactory consistency.

(CR represents the consistency ratio, which can be used to evaluate the consistency of judgment matrix; CI represents the consistency index, RI can be used as the average random consistency

index (this value can be known by looking up the table), and λ_{\max} represents the maximum characteristic root of the judgment matrix. If the matrix is a consistent matrix, then $\lambda_{\max} = n$, otherwise $\lambda_{\max} > n$, $n=1, \dots, 10$.)

RESULTS

Constructing the Hierarchical Structure Model of Influencing Factors of School Physical Education Policy Implementation

Table 4**Evaluation Index of Influencing Factors of School Physical Education Policy Implementation**

Target layer A	Criterion layer B	Subcriterion layer C	Scheme level D
Evaluation of influencing factors of school physical education policy implementation A	Executive subject ability target B1	School principal C1	Principal's cognition and attitude towards school physical education policy D1
			The headmaster's ability to implement the school physical education policy D2
		Physical education teacher C2	PE Teachers' cognition and attitude towards school physical education policy D3
			The ability of physical education teachers to carry out school sports policy D4
	Organize the implementation of objectives B2	Organization C3	Rationality of school organization setting D5
			The degree of coordination and cooperation between various departments of the school and the sports group D6
			Synergistic ability of physical education teaching and research group D7
			Clarity of post responsibilities of physical education teachers D8
		Operating mechanism C4	Feasibility and effectiveness of incentive system D9
			Feasibility and effectiveness of binding system D10
			The feasibility and effectiveness of supervision and evaluation system D11
			The smoothness and accuracy of the information channel of sports policy in schools D12
			Timeliness and effectiveness of schools receiving information on sports policy implementation D13
	School physical education policy objectives B3	Science of school physical education policy C5	Scientific theoretical basis of school physical education policy making D14
			Scientific nature of school physical education policy scheme D15
		Clarity of school physical education policy C6	Clarity of school physical education policy objectives D16
			Operability of school physical education policy content D17

Table 4
Evaluation Index of Influencing Factors of School Physical Education Policy Implementation

	Execution resources and environment B4	School implementation resources and environment C7	Investment in sports activities per student in schools D18
			School sports venues and sports equipment and facilities per student D19
			Ratio of physical education teachers to students D20
			Physical Education Teachers' Education Structure D21
			Professional title structure of PE teachers D22
		School cultural environment C8	Physical Culture of School Sports D23
			School sports system culture D24
			School sports spiritual culture D25
	Implementation effect target B5	Physical education teaching situation C9	The proportion of physical education class hours is D26
			Implementation of physical education teaching plan D27
		Development of extracurricular physical exercise C10	Development of extracurricular sports activities D28
			Development of sports activities during the big break D29
			The average daily physical activity time of students is D30
		After-school sports training competition C11	The number of sports meetings held in the whole school every year is D31
			The number of small group sports competitions per semester is D32
			Number of sports teams trained in the school system D33
		Students' physique and achievement C12	Students' physique test reaches the standard D34
			Students' passing in physical education D35

Determination of Evaluation Index Weight

Twelve full-time senior and deputy senior experts (Table 5) were invited to distribute 12 expert questionnaires on the basis of explaining the filling requirements, to compare the evaluation indexes of influencing factors on the implementation of school sports policy in pairs,

and fill in the corresponding scores. All questionnaires were recovered, and the recovery rate was 100%. During the statistical analysis, 9 questionnaires filled in reasonable data and passed the consistency test.

Table 5
List of Expert Survey and Distribution of Evaluation Index Weight of School Physical Education Policy Implementation

Expert number	School	Title
X	Xinan University	Professor
G	Xinan University	Professor
H	Jiangsu normal university	Associate professor
H	Shangrao Normal College	Associate professor
S	Guangdong ocean university	Associate professor
S	China West Normal University	Professor
Z	China West Normal University	Professor
Z	lishui university	Professor
W	China West Normal University	Professor
Y	China West Normal University	Associate professor
Z	China West Normal University	Professor
Y	China West Normal University	Associate professor

When the criterion layer (B) is in the reaction target layer (A), the judgment matrix given by 9 experts belongs to multi-expert single criterion weight calculation, and Excel is used to calculate

the weight vector of each expert judgment matrix. The expert judgment matrix table and weight calculation process are as follows:

Table 6
Judgment Matrix Table Given By 9 Experts When the Criterion Layer Reflects the Target Layer

Serial number Target layer	1	2	3	4	5	6	7	8	9
B1/B2	1/2	1/2	1	1	2	2	2	1/2	1
B1/B3	1	1/4	1	2	3	3	3	3	1
B1/B4	2	1/4	1	5	4	1	1	2	1/4
B1/B5	1	1/4	1	1/7	2	1	2	1	2
B2/B3	1	2	1	3	2	1	1	2	3
B2/B4	1/2	2	1	3	2	1	1	2	1/5
B2/B5	1/2	1/3	1	1/5	3	1	1	1/4	4
B3/B4	2	1	1	3	3	1	1	1	1/3
B3/B5	1	1/4	1	1/5	2	1	1	1/4	1
B4/B5	1	1/4	1	1/5	2	1	1	1/4	2

The weight calculation results of 9 experts are:

$W_1 = 0.198$	0.061	0.200	0.152	0.378	0.280	0.317	0.215	0.168
0.173	$W_2 = 0.195$	$W_3 = 0.200$	$W_4 = 0.160$	$W_5 = 0.249$	$W_6 = 0.171$	$W_7 = 0.168$	$W_8 = 0.198$	$W_9 = 0.230$
0.228	0.140	0.200	0.090	0.174	0.157	0.155	0.091	0.125
0.173	0.140	0.200	0.048	0.106	0.196	0.193	0.099	0.365
0.228	0.462	0.200	0.550	0.092	0.196	0.168	0.396	0.111

Maximum characteristic root $\lambda_{\max 1} = 5.429$;
 $\lambda_{\max 2} = 5.338$; $\lambda_{\max 3} = 5$; $\lambda_{\max 4} = 5.43$;
 $\lambda_{\max 5} = 5.317$; $\lambda_{\max 6} = 5.145$; $\lambda_{\max 7} = 5.102$;
 $\lambda_{\max 8} = 5.332$; $\lambda_{\max 9} = 5.085$.

Consistency test results: (The formula of one-time test is as follows: $CI = \lambda_{\max} - n / n - 1$; $CR = CI / RI$;))

$CI_1 = 0.105$; $CI_2 = 0.084$; $CI_3 = 0$; $CI_4 = 0.106$;
 $CI_5 = 0.079$; $CI_6 = 0.036$; $CI_7 = 0.025$; $CI_8 = 0.08$;
 $CI_9 = 0.028$. (When $CR < 0.10$, it is considered that the judgment matrix has satisfactory consistency; otherwise, it is necessary to modify the judgment matrix appropriately.)

$RI = 1.12$ for all experts, so according to the formula:

$CR_1 = 0.093$; $CR_2 = 0.075$; $CR_3 = 0$; $CR_4 = 0.095$;

$CR_5 = 0.07$; $CR_6 = 0.032$; $CR_7 = 0.023$; $CR_8 = 0.072$;

$CR_9 = 0.025$, All the judgment matrixes of nine experts passed the consistency test. All experts meet the consistency test, and the judgment matrix is established by the weights obtained by nine experts according to their own knowledge and experience.

According to the formulas $M_i = \prod_{j=1}^n a_{ij}$ ($i = 1, 2, \dots, n$) and $\bar{W}_i = \sqrt[n]{M_i}$ ($i = 1, 2, \dots, n$), it is calculated that: $\bar{W}_1 = 0.29748$; $\bar{W}_2 = 0.2664$; $\bar{W}_3 = 0.16872$; $\bar{W}_4 = 0.17538$; $\bar{W}_5 = 0.20202$. Therefore, the normalized index weight is: $\bar{W}_1 = 0.268$; $\bar{W}_2 = 0.240$; $\bar{W}_3 = 0.152$; $\bar{W}_4 = 0.158$; $\bar{W}_5 = 0.182$.

In the same way, calculate the weight of each index when layer B reacts with layer A and layer C reacts with layer B. See Tables 7, 8, 9, 10 and 11 for details:

Table 7
Comprehensive Weight Table of the Main Body Ability Index of School Physical Education Policy Implementation

Criterion layer B	Subcriterion layer C	Scheme level D
Competency factor of executive body B1 (0.268)	School principal C1(0.2133)	Principal's cognition and attitude towards school physical education policy D1(0.1156)
		Principal's ability to implement school physical education policy D2(0.0977)
	Physical education teacher C2(0.0547)	Physical education teachers' cognition and attitude towards school physical education policy D3(0.0249)
		The ability of physical education teachers to carry out school sports policy D4(0.0298)

Table 8
Comprehensive Weight Table of Behavior Factor Index of School Sports Policy Implementation Organization

Criterion layer B	Subcriterion layer C	Scheme level D
Organizational execution factors B2 (0.240)	Organization C3(0.1889)	The rationality of school organization setting D5(0.0368)
		The degree of coordination and cooperation between school departments and sports groups was D6(0.0822)
		Collaborative ability of PE teaching and research group D7(0.0334)
		Clarity of post responsibilities of physical education teachers D8(0.0363)
	Operating mechanism C4(0.0511)	Feasibility and effectiveness of incentive system D9(0.0189)
		Feasibility and effectiveness of binding system D10(0.0104)
		Supervise and evaluate the feasibility and effectiveness of the system D11(0.0109)
		The smoothness and accuracy of the information channel of sports policy in schools D12(0.0060)
		Timeliness and effectiveness of schools receiving information on the implementation of sports policies D13(0.0049)

Table 9
Comprehensive Weight Table of Factors and Indicators of School Physical Education Policy Implementation

Criterion layer B	Subcriterion layer C	Scheme level D
School physical education policy factors B3 (0.152)	Scientific nature of school physical education policy C5(0.0644)	The theoretical basis of school physical education policy making is scientific D14(0.0462)
		Scientific nature of school physical education policy scheme D15(0.0182)
	Clarity of school physical education policy C6(0.0876)	Clarity of school physical education policy objectives D16(0.0442)
		Operability of school physical education policy content D17(0.0434)

Table 10
Comprehensive Weight Table of School Physical Education Policy Implementation Resources And Environmental Factors Indicators

Criterion layer B	Subcriterion layer C	Scheme level D
Implementation resources and environmental factors B4 (0.158)	School implementation resources and environment C7(0.1198)	Investment in sports activities per student in schools D18(0.0484)
		The average area of sports venues and sports equipment and facilities per student in the school is D19(0.0349)
		The ratio of PE teachers to students is D20(0.0140)
		Education structure of physical education teachers D21(0.0114)
		Professional title structure of PE teachers D22(0.0111)
	School cultural environment C8(0.0382)	Physical Culture of School Sports D23(0.0176)
		School sports system culture D24(0.0143)
		School sports spiritual culture D25(0.0063)

Table 11
Comprehensive Weight Table of Factors and Indicators of School Physical Education Policy Implementation Effect

Criterion layer B	Subcriterion layer C	Scheme level D
Execution effect factor B5 (0.182)	Physical education teaching situation C9(0.0697)	The proportion of physical education class hours is D26(0.0341)
		Implementation of physical education teaching plan D27(0.0356)
	Development of extracurricular physical exercise C10(0.0551)	Development of extracurricular sports activities D28(0.0255)
		Development of sports activities during the big break D29(0.0106)
		The average daily physical activity time of students is D30(0.0191)
	After-school sports training competition C11(0.0260)	The number of sports meetings held in the whole school every year is D31(0.0136)
		The number of small group sports competitions per semester is D32(0.0077)
		The number of sports teams trained in the school system is D33(0.0047)
	Students' physique and achievement C12(0.0311)	Students' physical fitness test up to standard D34(0.0142)
		The passing rate of students' sports scores is D35(0.0169)

Analysis on the Weight of All Levels of Indicators Affecting the Implementation of School Physical Education Policy

According to the data analysis, the weights of the five first-level indicators are: executive ability factor (0.268), organizational execution factor (0.240), school sports policy factor (0.152), execution resources and environment factor (0.158), and execution effect factor (0.182). The ability factor of executive subjects ranks first among the influencing factors at the standard level, and becomes the primary factor affecting the implementation effect of school physical education policy. Grass-roots implementation subjects include grass-roots school principals and physical education teachers. School principals are the first responsible person for the implementation of school physical education policies, and the key to the implementation effect of school physical education policies lies in the principals; Physical education teachers are the direct promoters of the implementation of school physical education policies, and the implementation of school physical education policies can only be implemented through the teaching practice process of physical education teachers. For principals, under the pressure of exam-oriented education, principals naturally have low recognition of school physical education policies; As far as PE teachers are concerned, although they have a high degree of recognition of the school PE policy, the lack of understanding of the school PE policy and the ability to actively solve problems also leads to the deviation of policy implementation. Therefore, Pan Lingyun and other studies pointed out that primary and secondary schools are the most basic units to implement the education policies of governments at all levels. Therefore, if there is no policy promotion at the school physical education level, the school physical education policy cannot really take root, especially the principals of various grass-roots schools, which is an important "engine" to call on teachers and students to promote the implementation of school physical education policies¹⁰.

Organizational implementation factor accounts for 0.240 of the comprehensive weight value,

which is the second major factor affecting the implementation of school physical education policy. Relevant research shows that the relevant departments of the school only pay attention to their own internal affairs and are only responsible for the tasks assigned by the higher authorities, while ignoring the consultation and cooperation between peers. As a result, the issue of school sports funds can not be agreed with the financial department, and the issue of sports teachers' allocation differs from the personnel department, and they are fragmented and separated from each other¹¹, which inevitably leads to the bottleneck of the implementation of "regulations" in the process of school sports policy implementation from relatively independent to conflicting¹². Therefore, scholars Pan Lingyun, Wang Jian and Fan Lianxiang pointed out that the real dilemma of school sports policy implementation is how to build a cooperative mechanism and policy governance pattern of university linkage among multiple participants under the framework of "leading department+cooperating department".

The factor of implementation effect accounts for 0.182 of the comprehensive weight value, which becomes the third main factor affecting the implementation of school physical education policy. Implementation effect mainly refers to the actual effect and result produced by the implementation of school physical education policy. It is embodied in the achievement of school physical education policy objectives and the completion of school physical education policy tasks. Physical education is the fundamental way for students to systematically accept the basic knowledge, technology and skills of physical education. Therefore, the quality of physical education will directly affect students' mastery of basic knowledge, technology and skills. However, the relevant research points out that the formulation of physical education teaching plan is out of touch with the schedule of physical education teaching, resulting in the phenomenon of "two skins" in physical education teaching, which makes it difficult for physical education teaching tasks to be fully implemented in teaching practice, and it is also difficult for schools to implement physical education policies. Extracurricular sports activities are an extension of

physical education class. Students' technical skills in class need to be consolidated and improved through the practice of extracurricular sports activities. In this way, the technical skills they have learned can be continuously strengthened and finally realized automation. At the same time, this regular extracurricular exercise will virtually cultivate students' habit of lifelong physical exercise, which will benefit them for life. However, in the concrete implementation of extracurricular sports activities, schools can't escape the embarrassment that organizations become mere formality, slogans are greater than actions, and theory is higher than practice¹³. In the investigation of the western rural primary and secondary schools, the same problem is also reported. Therefore, the implementation effect factor has become the main factor affecting the implementation of school physical education policy.

Through data analysis, the weights of 12 secondary indicators are school principals (0.2133), Physical education teacher (0.0547), Organization (0.1889), Operating mechanism (0.0511), Scientific school physical education policy (0.0644), Clarity of school physical education policy (0.0876), School implementation resources (0.1198), School cultural environment (0.0382), Physical education teaching (0.0697), Extracurricular physical exercise (0.0551), After-school sports training competition (0.0260), Students' physique and achievement (0.0311). School principals, organizations and school executive resources rank among the top three influencing factors at the sub-criteria level. The school principal is the first person who influences the implementation of the policy, and the key to the effective implementation of the school physical education policy lies in the principal. However, in the face of the benefit choice of "enrollment rate", the principal, who is the first person responsible for policy implementation, inevitably appears to evade the implementation of school physical education policy for various reasons or "take shortcuts and cut corners", which restricts the effective implementation of school physical education policy. The implementation effect of school physical education policy is not good, and the

key is the lack of mechanism between executing agencies. It is found that the resources of school sports venues and facilities are positively correlated with the development of school physical education and significantly correlated with the detection rate of obesity among students ($P = 0.05$)¹⁴. The actual situation is that at present, due to insufficient attention, insufficient investment and limited space, the stadiums and gymnasiums in primary and secondary schools in China are still imperfect, and 32.9% of them can not meet or completely meet the needs of physical education, while the compliance rates of sports venues in primary and junior high schools are only 45.32% and 62.24%¹⁵.

Through data analysis, the weight values of 35 three-level indicators (see Table 5), among which, the top three influencing factors of the program-level indicators are the principal's attitude towards the school sports policy cognition ($D1 = 0.1156$); Principal's ability to implement school physical education policy ($D2 = 0.0977$); The degree of coordination and cooperation between school departments and sports groups ($D6=0.0822$). Only when the principal has a clear grasp of the content and spiritual essence of the school sports policy, and has a correct understanding of the intrinsic value and interests of the policy, can he understand the policy intention of the policy makers and have a correct policy attitude, thus generating positive behavior motivation and ensuring the smooth realization of the policy objectives. Therefore, the principal's attitude towards the cognition of school physical education policy is the key factor affecting the implementation of school physical education policy. However, due to the influence of the traditional concept of "emphasizing literature over martial arts" and the exam-oriented education system, there are cognitive deviations and conflicts of interest among the target groups, and the principal is caught in a dilemma, which makes it difficult to form a joint force for the implementation of school physical education policy¹⁶. At the same time, the principal's ability to implement the school physical education policy is the premise to effectively promote the implementation of the school physical education policy. Therefore, some scholars pointed out that the lack of ability of the main body of the school

physical education policy implementation is one of the important reasons that affect the implementation of the school physical education policy¹⁷. The multi-attribute characteristics of school sports policy implementation determine that school sports policy implementation needs multi-departments to participate in it. Therefore, Pan Lingyun and Wang Jian pointed out that the biggest dilemma of school sports policy implementation lies in how to form an efficient linkage cooperation mechanism and policy governance pattern among multiple policy subjects.

DISCUSSION

In order to analyze the influencing factors of school physical education policy implementation, this paper establishes the index hierarchy model of influencing factors of school physical education policy implementation by using AHP. By comparing the pairwise importance of each level index, the judgment matrix is constructed step by step. On this basis, the relative importance order weight of each level element is calculated, and the consistency test is carried out, and then the ranking of each level and the total ranking are obtained.

The hierarchical structure model of influencing factors of school physical education policy implementation is constructed, which includes five first-level indicators in the criterion layer (A), 12 second-level indicators in the sub-criterion layer (B) and 35 third-level indicators in the scheme layer (C). On the basis of the model construction, the judgment matrix of criterion layer, sub-criterion layer and scheme layer is constructed step by step, and the relative importance order weights of elements in each layer are calculated. After passing the consistency test, the ranking and general ranking of influencing factors of school physical education policy implementation are obtained. Based on AHP, the order of the first-level index weight of the influencing factors of school physical education policy implementation is as follows: Executive subject ability > organization and execution > execution effect > execution resources and environment > school physical education policy. Compared with previous

qualitative research results, it shows that the derived ranking and comprehensive ranking relationship among the influencing factors is reasonable and can be used to analyze the influencing factors of school physical education policy implementation.

In a word, this paper introduces AHP, quantifies subjective concepts, and carries out mathematical processing. The calculation results are more accurate and have certain popularization value. However, this research method basically uses subjective judgment of experts to assign scores, and different experts have different understandings of the problems, which may deviate from the actual situation to some extent. Therefore, in the future research, qualitative research and quantitative research can be combined, which can provide greater help to analyze the influencing factors of school physical education policy implementation.

Human Subjects Approval Statement

This paper did not include human subjects.

Conflict of Interest Disclosure Statement

None declared.

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References

1. Fan H Y, Tang Y, Zhang J L. Exploration of the levels and affecting factors of Shanghai urban junior middle school students' extracurricular physical activities. *Journal of Physical Education*, 2020,27(5):1-8.
2. Li F H, Li C. Analysis of the Influencing Factors of Uncivilized Tourism Behaviors Based on the AHP Entropy Right Method. *Journal of Gansu Science*, 2020,32(4):9-14.
3. Liang G J, Lin Z H, You C, Zhu Y X. Risk Assessment of Execution Ability of Natural Science Research Project based on AHP. *Journal of Mianyang Normal University*, 2020,39(8):25-34.
4. Ling X H, Xue M L, Li F J, Study on attribution and coping strategies of school physical Education Policy Executive Retardation. *Contemporary Educational Science*, 2015(8):49-52.

5. Luo D X. Study on the Execution Block School Physical Education——Taking the Implementation of Sunshine Sports Activities at College as an example, *Fujian Normal University*, 2012.
6. NIE F H. Research of Identifying Method of Consistency Based on Judgment Matrix. Shenyang University of Technology, 2012.
7. Pan L Y, Wang J, Fan L X. Problems existing in school physical education policy implementation in China and corresponding strategies. *Journal of Physical Education*, 2017, 24(2):80-84.
8. Pan L Y, Wang J, Fan L X, Logic Recognition and Promotion Strategies of Policy Implementation in School Physical Education——Based on an Analytical Framework of Notions, Interests and Institutions. *Sports science*, 2017, 37(3):3-12.
9. Pan L Y, Wang J, Fan L X. Restraining Factors and Path Choice of Policy Implementation in School Physical Education in China —— Under Smith's Policy-Implementation-Processing Framework. *Sports science*, 2015, 35(7):27-73.
10. T D P. Problems and Optimization: the Survey of the Implementation Process of School Physical Education Policy in China——Takes the Smith-Model as the theoretical framework. *Journal of Guangzhou Physical Education Institute*, 2019, 39(1):113-116.
11. Wang J, C Y X. Status Q, Constraints and Countermeasures of School Sports Stadiums and Facilities. *Journal of Shanghai Physical Education Institute*, 2015, 39(2):86-89.
12. Wang L F, Yao Y N. A New Method for Subjective Linear Weighted Evaluation: the Median Analytic Hierarchy Process. *Chinese Journal of Systems Science*, 2018, 26(1):96-99.
13. Wang Y, Fan L X. Research on the Implementation of School Physical Education Policy in China from the Perspective of Tiao/Kuai Authority Relations: Characteristics, Problems and Countermeasures. *Journal of Guangzhou Physical Education Institute*, 2019, 39(4):106-109.
14. Wu J M, Jia H. Research on Influencing Factors of Intelligent Garbage Classification and Recovery Benefit Based on Analytic Hierarchy Process. *Value engineering*, 2020(1):85-88.
15. Yang S L. Comparative Study on Several Scales in AHP. *Systems Engineering-Theory & Practice*, 2004(9):51-60.
16. Zhang W P, Wang J, Dong G Y. Let school physical education policies be rooted——Based on interpretation of No.3 documents issued by the Ministry of Education. *Journal of Physical Education*, 2015, 22(1):66-69.
17. Zhang Y. Study on of school sports field in Liaoning province based on student physical health. *Journal of Guangzhou Physical Education Institute*, 2017, 37(1):126-128.