RESEARCH ON INFLUENCING FACTORS OF ADOLESCENTS' SPORTS HEALTH BEHAVIORS IN SOCIAL ECOLOGY

PESQUISA SOBRE FATORES QUE INFLUENCIAM OS COMPORTAMENTOS DE SAÚDE ESPORTIVA DE ADOLESCENTES EM ECOLOGIA SOCIAL

INVESTIGACIÓN SOBRE LOS FACTORES QUE INFLUYEN EN LOS COMPORTAMIENTOS DE SALUD DEPORTIVA DE LOS ADOLESCENTES EN LA ECOLOGÍA SOCIAL

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ABSTRACT

Introduction: Physical exercise has a positive effect on the health of individuals. Long-term sedentary behavior can induce coronary heart disease, hypertension, diabetes, and other chronic diseases. Lack of physical exercise has become the fourth leading cause of death worldwide. Therefore, youth sports are very important for physical health. Objective: To systematically reveal the influencing factors of adolescents' physical exercise and improve the effectiveness of interventions on adolescents' physical exercise behaviors, this article is based on social ecology theory to study the structural model of adolescents' physical exercise factors. Methods: The thesis considers factors affecting adolescent physical exercise as the research object and uses literature method, questionnaire survey, mathematical statistics, etc., to construct a structural model of factors affecting youth physical exercise, including four primary indicators and 19 secondary indicators. Results: Adolescent physical exercise is affected by the school, family, social and personal factors. Among them, family factors have the greatest impact on young people's physical exercise. Personal factors rank second, school factors, and social factors rank third. Among the family factors, the major influences on youth physical exercise are "parental support," "parents' cognition of physical exercise," and "parental exercise habits." Conclusions: The influencing factors of adolescent physical exercise involve four aspects: family, society, school, and self. Family factors have the greatest impact on adolescent physical exercise, and personal factors are the second, school factors, and social factors are the third. Level of evidence II; Therapeutic studies - investigation of treatment results.

Keywords: Social environment; Adolescent; Exercise.

RESUMO

Introdução: o exercício físico tem um efeito positivo na saúde das pessoas. O comportamento sedentário de longo prazo pode induzir doenças coronárias, hipertensão, diabetes e outras doenças crônicas. A falta de exercício físico tornou-se a quarta causa de morte em todo o mundo. Portanto, os esportes juvenis são muito importantes para a saúde física. Objetivo: Desvendar sistematicamente os fatores que influenciam o exercício físico de adolescentes e melhorar a eficácia das intervenções sobre os comportamentos de exercício físico de adolescentes, este artigo se baseia na teoria da ecologia social para estudar o modelo estrutural dos fatores do exercício físico de adolescentes. Métodos: a tese considera os fatores que afetam o exercício físico do adolescente como objeto de pesquisa e usa o método da literatura, questionário, estatística matemática, etc., para construir um modelo estrutural de fatores que afetam o exercício físico do jovem, incluindo quatro indicadores primários e 19 indicadores secundários. Resultados: O exercício físico dos adolescentes é afetado por fatores escolares, familiares, sociais e pessoais. Dentre eles, os fatores familiares são os de maior impacto sobre a prática de exercícios físicos dos jovens. Fatores pessoais estão em segundo lugar, fatores escolares e fatores sociais vêm em terceiro. Entre os fatores familiares, as principais influências sobre a prática de exercícios físicos dos jovens são "apoio dos pais", "conhecimento dos pais sobre a prática de exercícios físicos" e "hábitos de exercício dos pais". Conclusões: Os fatores que influenciam a prática de exercícios físicos no adolescente envolvem quatro aspectos: família, sociedade, escola e eu. Os fatores familiares têm maior impacto sobre o exercício físico dos adolescentes, e os pessoais em segundo lugar, os escolares e os sociais em terceiro. Nível de evidência II; Estudos terapêuticos- investigação dos resultados do tratamento.

Introducción: el ejercicio físico tiene un efecto positivo en la salud de las personas. El comportamiento sedentario a largo plazo puede inducir enfermedades coronarias, hipertensión, diabetes y otras enfermedades crónicas. La falta de ejercicio físico se ha convertido en la cuarta causa de muerte en todo el mundo. Por tanto, los deportes juveniles son muy importantes para la salud física. Objetivo: Revelar sistemáticamente los factores que influyen en el ejercicio físico de los adolescentes y mejorar la efectividad de las intervenciones sobre las conductas de ejercicio físico de los adolescentes, este

artículo se basa en la teoría de la ecología social para estudiar el modelo estructural de los factores de ejercicio físico de los adolescentes. Métodos: La tesis considera factores que afectan el ejercicio físico adolescente como objeto de investigación y

Descritores: Meio social; Adolescente; Exercício físico.

RESUMEN





Artigo Original Artículo Original utiliza el método de la literatura, cuestionario, estadística matemática, etc., para construir un modelo estructural de factores que afectan el ejercicio físico juvenil, incluyendo cuatro indicadores primarios y 19 indicadores secundarios. Resultados: El ejercicio físico de los adolescentes se ve afectado por factores escolares, familiares, sociales y personales. Entre ellos, los factores familiares tienen el mayor impacto en el ejercicio físico de los jóvenes. Los factores personales ocupan el segundo lugar, los factores escolares y los factores sociales ocupan el tercer lugar. Entre los factores familiares, las principales influencias sobre el ejercicio físico de los jóvenes son el "apoyo de los padres", el "conocimiento de los padres sobre el ejercicio físico adolescente involucran cuatro aspectos: familia, sociedad, escuela y yo. Los factores familiares tienen el mayor impacto en el ejercicio físico de los adolescentes, y los factores personales son el segundo, los factores familiares tienen el mayor impacto en el ejercicio físico de los adolescentes, y los factores personales son el segundo, los factores familiares tienen el mayor impacto en el ejercicio físico de los adolescentes, y los factores personales son el segundo, los factores escolares y los factores sociales el tercero. **Nivel de evidencia II; Estudios terapéuticos- investigación de los resultados del tratamiento.**

Descriptores: Medio social; Adolescente; Ejercicio físico.

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INTRODUCTION

Physical exercise has a positive effect on the health of individuals. Long--term sedentary behavior can induce coronary heart disease, hypertension, diabetes, and other chronic diseases. Lack of physical exercise has become the fourth risk of death worldwide. Studies have shown that the current lack of physical exercise among young people is a serious problem facing our country. According to the National Student Fitness and Health Survey results, two-thirds of students exercise less than one hour a day, and nearly one-quarter of students no exercise. The rate of obesity and overweight in adolescents and the rate of defective eyesight have increased compared with previous years. Although the decline in physical fitness has been controlled, adolescents' physical fitness is still at a relatively low level. Therefore, a systematic review of the current reasons for the decline in young people's physical fitness and the adoption of targeted intervention measures are of great significance for improving the level of physical exercise of young people. As a promotion theory for studying individual behavior, social ecology theory has been widely recognized by scholars at home and abroad. The theory believes that individual behavior is formed during the interaction between the individual and the surrounding environment and emphasizes individual behavior development. It is nested in a series of environmental systems that influence each other. The system interacts with the individual and affects the development of individual behavior.¹ As a growing individual, the development of their behavior will be affected by many surrounding factors, including society, family, school, etc. Therefore, it has become an important research topic to study the influencing factors of adolescents' physical exercise with social ecology theory, reveal the interaction between the factors, and then make necessary interventions in the adolescents' physical exercise. Based on this, based on the theory of social ecology, this article constructs a model of factors affecting youth physical exercise to enrich youth sports health promotion's theoretical system. At the same time, it can provide effective guidance for the formulation of youth sports participation promotion strategies.

METHOD

Research object

This paper takes the model of factors affecting youth physical exercise as the research object and randomly selects two middle schools. Each school selects 50 junior, second and third grades, and 1500 adolescents as the survey objects.

Research methods

Document method

The thesis analyzes, summarizes, sorts out the previous research by consulting the collected related literature and books, further understands and analyzes the existing research trends, and provides a reference for this thesis.

Questionnaire survey method

The questionnaire is based on ecological theory, combined with the related scales of physical exercise influencing factors in related literature and books. It has formulated a questionnaire on adolescent physical exercise's influencing factors from the four dimensions of school, family, society, and individuals.² A total of 600 questionnaires were issued, 580 were recovered, 30 invalid questionnaires were eliminated, and 550 valid questionnaires were retained.

Mathematical Statistics

The data analysis in this paper is done with the help of two statistical software SPSS21.0 and AOMS24.0. Among them, the application of SPSS21.0 to complete the questionnaire's reliability and validity test and the optimization of the index of the questionnaire; the application of AOMS24.0 to construct and modify the model of factors affecting adolescent physical exercise.

Questionnaire index optimization and model construction

Design of the questionnaire

According to the theory of social ecology, an individual's growth is directly affected by the surrounding environment, indirectly, or by the interaction of multiple factors. Therefore, the questionnaire's content involves four aspects: family level, school level, individual level, and social level. On this basis, the "Questionnaire on the Influencing Factors of Ado-lescent Physical Exercise" was formulated in combination with relevant literature data.³ The questionnaire included 19 observation indicators.

OPTIMIZATION OF QUESTIONNAIRE INDICATORS

Reliability test of the questionnaire

The questionnaire's reliability test is to test the reliability of the questionnaire data, and it is a test of the consistency and stability of the questionnaire data. At present, Cronbach's α (Alpha) reliability coefficient method is used to judge the reliability of the questionnaire reliability standard, the Cronbach coefficient. The paper uses SPSS21.0 software to analyze the reliability of the questionnaire data. From the results, it can be seen that the reliability of the 19 observation indicators of the questionnaire is 0.925, which has high reliability, and the reliability of the indicators at the four levels are 0.853, 0.844, Both 0.745 and 0.776 also have relatively high reliability, so the questionnaire passed the reliability test. (Table 1)

Table 1. Questionnaire reliability coefficient table.

Latent variable	Cronbach's Alpha	Number of items	
Overall	0.925	19	
Family factors	0.853	5	
Personal reason	0.844	6	
School factor	0.745	4	
Social factors	0.776	4	

Validity test of the questionnaire

The questionnaire's validity is the validity of the questionnaire, which refers to whether the recovered questionnaire data can achieve the desired result to the greatest extent. The validity of the questionnaire can be tested by factor analysis. Before the factor analysis of questionnaire data, the Bartlett sphere test and KMO (Kaiser Meyer Olkin) test should be performed on the questionnaire data to see if the data is suitable for exploratory analysis.

It can be seen from Table 2 that the overall KMO value of the 19 observation indicators of the questionnaire is 0.923, which is within a very suitable range, and the sig value is 0.000 less than 0.001, so the guestionnaire data can be subjected to exploratory factor analysis, which also shows that the overall guestionnaire can reflect the Potential scale structure. The thesis uses SPSS to screen further the 19 observation indicators that have passed the reliability and validity test. It uses SPSS21.0 software to analyze--dimensionality reduction-factors using principal component analysis and maximum variance rotation method, set the feature value greater than 1 as the extraction condition, and extract. Four principal component factors are extracted. The four principal components extracted correspond to the four latent variables that affect youth physical exercise.⁴ The total variance explained by the four main factors (Table 3), of which the cumulative variance contribution rate of the four main factors is 62.863%, which is greater than 50%. The 19 observation indicators are rotated to maximize the variance to obtain the orthogonal factor loading matrix.

The factor loads of the 19 observational indicators of the questionnaire are all positive and greater than 0.5, indicating that the questionnaire has passed the validity test. After item analysis and exploratory factor analysis, the quality of each item is identified. The scale the structural validity of the latent variables and the observed variables meet the requirements of statistical research, and finally, a questionnaire of 19 observation indicators affecting adolescent physical exercise is obtained.

Kaiser. Meyer. Olkin measure of sampling adequacy 0.923			
Bartlett's sphericity test	Approximatechi-square	2172.676	
	df	171	
	Sig.	.000	

		1	2	3	4
	Total	8.36	1.378	1.193	1.013
Initial eigenvalue	Variance %	44.001	7.251	6.28	5.331
	Accumulation %	44.001	51.251	57.532	62.863
Extract the sum of squares and load	Total	8.36	1.378	1.193	1.013
	Variance %	44.001	7.251	6.28	5.331
	Accumulation %	44.001	51.251	57.532	62.863
Rotate the sum of squares loading	Total	3.44	3.333	2.803	2.368
	Variance %	18.106	17.542	14.751	12.464
	Accumulation %	18.106	35.648	50.399	62.863

Table 3. Latent variables explain the total variance statist	ics
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MODEL ASSUMPTIONS AND IDENTIFICATION

Model assumptions

The thesis uses AMOS24.0 software to build a model of the factors affecting adolescent physical exercise. According to the final physical exercise influencing factor index, family factors, school factors, social factors, and personal factors are used as the model's four potential variables. The questionnaire is passed through the letter the 19 items of the validity test are used as the observed variables of the structural model to construct a hypothetical model of the factors affecting youth physical exercise, as shown in Figure 1, where *e* represents the residual item.⁵

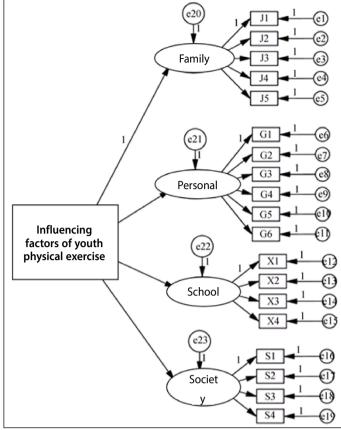


Figure 1. The hypothesis of the model of factors affecting youth physical exercise.

Model identification

We should identify the model when modeling. According to the literature, the most commonly used method for model identification is t rule. When t is greater than, less than or equal to df's value, it corresponds to over-recognition, adequate recognition, and under-recognition. The calculation formula of df is as follows:

$$df = (P) * (P+1) / 2 \tag{1}$$

Where df represents the number of measured data, p represents the observed variable in the model, and the t value is the number of freely estimated parameters. From the above analysis, we can see that there are 19 observed variables in the equation. Therefore, the equation's number of measured data is calculated according to the formula df=19*20/2=190, and there are 46 estimated parameters. The t value is smaller than the number of measured data df. Therefore, the equation is over-identified and can be analyzed in the next step.

RESULTS

When using AMOS24.0 software for model analysis, it is necessary to fit and correct the initially constructed model. If the model's fitting index cannot fit the observed data, the model needs to be revised according to the relevant research results and correction index.⁶ Finally, a model with a higher degree of adaptation to the observation index is obtained.

First-order confirmatory factor analysis and fitness test

It can be seen from Table 4 that X2/DF, GFI, TLI, PCFI, and PNFI are all within reasonable standard values, while AGFI, NFI, and IFI have not yet reached reasonable values. Combining the above results of the goodness of fit index shows this the first-order model is acceptable, but further fitting correction is needed.

Second-order confirmatory factor analysis and fitness test

From Tables 4 and 5, it can be seen that after the first-order and second-order verification of the model, most of the goodness of fit index is within a reasonable range, but there are still a few indicators that are not reasonable enough. Therefore, the next step is to modify the model to fit the model's better fit within a reasonable range.

Modification of the model

When the parameter value of the constructed model does not reach the standard value, and the model does not fit, the model can be appropriately modified to make the parameter value of the model reach the standard range to obtain a better fit model. As shown in Figure 2, there are two ways to modify the model. One is to modify by deleting indicators, and the other is to modify by MI correction index. This article uses the MI correction index for correction. The larger the MI correction index, the more relevant the two are large. By establishing the correlation between the two, the model adaptation can be improved. Through the MI correction index, it is found that the four groups of models e1 and e2, e1 and e3, e2 and e16, e5 and e19 are relatively large, so the correlation is established.⁷ Perform model calculations to check the fit of the model.

It can be seen from Table 6 that the various goodness of fit indexes of the revised model are within a reasonable range. Therefore, the model passes the fittest, and the model fits well.

X2/DF	2.525	<2Good	Reasonable	Reasonable
GFI	0.861		>0.85	Adaptation
AGFI	0.803		>0.85	Not fit
RMSEA	0.082	<0.05 Excellent	Good	Good
NFI	0.836		>0.90	Not fit
IFI	0.839	>0.90		Not fit
TLI	0.915	>0.90		Adaptation
CFI	0.904	>0.90		Adaptation
PCFI	0.762		>0.50	Adaptation
PNFI	0.714	>0.50		Adaptation

Table 4. Fitting indices for first-order model validation.

Table 5. Fitting indices for second-order model validation.

X2/DF	2.221	<2 Good	Reasonable	Reasonable
GFI	0.854	>0.8	5	Adaptation
RMSEA	0.079	<0.05 Excellent Good		Good
NFI	0.858	>0.90		Not fit
IFI	0.913	>0.90		Adaptation
TLI	0.9	>0.90		Adaptation
CFI	0.91	>0.90		Adaptation
PCFI	0.745	>0.50		Adaptation
PNFI	0.702	>0.50		Adaptation

DISCUSSION

The influence of the four factors of family, individual, school, and society on adolescent physical exercise

Home and school are the main environments for children to receive an education. The sports values of parents and teachers, the mastery of sports knowledge, and the emphasis on youth sports will affect young people's participation in physical exercise. Personal factors directly affect the physical exercise of young people, but personal factors will be affected by many surrounding environments and their own psychological state and personal needs.⁸ Social factors mainly affect the physical exercise of young people through the sports atmosphere surrounding society.

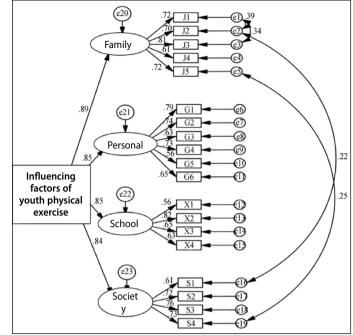


Figure 2. Modified fitting diagram of the model of factors affecting youth physical exercise.

Table 6. Mod	lel correction	fitting results.
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X2/DF	2.172	<2 Good	Reasonable	Reasonable
(GFI)	0.874	>0	.85	Adaptation
(AGFI)	0.878	>0.85		Adaptation
RMSEA	0.07	<0.05 Excellent	Good	Good
(NFI)	0.903	>0.90		Adaptation
(IFI)	0.92	>0.90		Adaptation
(TLI)	0.903	>0.90		Adaptation
(CFI)	0.919	>0.90		Adaptation
(PCFI)	0.774	>0.50		Adaptation
(PNFI)	0.725	>0.50		Adaptation

The impact of four specific factors on adolescent physical exercise

Analysis of the influence of family factors

It can be seen from the constructed model of obstacles to adolescent physical exercise that in the family influencing factors, five observation variables are extracted, namely "I can often go to the paid venues around my home for physical exercise" and "My parents often buy me sports-related products.", "My parents pay attention to the games and activities I participate in,""My parents love sports at home,""Because my parents think physical exercise can bring me a lot of benefits." The path coefficients are respectively 0.72, 0.70, 0.81, 0.61, and 0.72, which all belong to the range that must be considered. From the path coefficient, it can also be seen that the degree of influence of these observation indicators on family factors. From the analysis of the observed variables, the above variables can be summarized as four points: parental support, parental awareness of physical exercise, family economic conditions, and family sports atmosphere.

"Parents pay attention to the competitions and activities I participate in," "Parents often buy me sports-related products," this belongs to the parents' support for youth physical exercise. Parental support is very important in the family. Different levels of support will have different effects. Research has shown that individual participation in physical exercise is closely related to the social and cultural environment. If family members can support their children to participate in physical exercise, physical exercise participation will increase. If the opposite is true, participation in physical exercise will decrease.⁹ The data shows that individuals with low social support have a 25% higher chance of insufficient physical exercise participation than individuals with high social support.

"Because my parents believe that physical exercise can bring me a lot of benefits." This observational variable belongs to the parents' understanding of physical exercise. Parents are the first teachers of their children. Therefore, parents' knowledge of physical exercise and sports values will affect their children. Parents' attitudes towards physical exercise and their knowledge of physical exercise are of great significance to children's awareness and physical exercise behavior. Simultaneously, it also has a great impact on children's cognitive level of physical exercise.

Parents' exercise habits and family sports atmosphere are also an important factor that affects children's participation in physical exercises. Parents' exercise will create a good family sports atmosphere, drive children's physical exercises, and develop lifelong sports awareness. "I can often go to the paid venues around my home for physical exercise." It belongs to the family's economic situation. It is also an important factor affecting children's participation in physical exercise. Even if the children's awareness of physical exercise is enhanced, parents will be more aware of their children's sports participation. Exercise is supportive.¹⁰ If the family's economy is poor, the child cannot be provided with a safe place for exercise and the equipment needed, which will affect the child's participation in physical exercise.

Analysis of the influence of personal factors

Physical exercise is an individual's behavior, and people are the subject of physical exercise. Therefore, the subject's characteristics will affect the occurrence, development, and maintenance of this behavior. The personal factor is the expression of the subject's will and is the most direct and important factor for the individual to participate in physical exercise. According to the model, six observational variables are extracted in terms of personal influencing factors, namely "I know how to do physical exercise,""Physical exercise has a great influence on my entrance to the school," and "My body is very suitable for me to do sports.""Exercise,""I can get praise from others when I do physical exercise," "I can get a lot of fun in physical exercise," and "The sports skills I have mastered can make me participate in physical exercise well." The path coefficients are 0.79, 0.74, 0.63, 0.73, 0.56, and 0.65, which belong to the range that affects youth physical exercise.

"I know how to do physical exercise," which belongs to the personal cognition of physical exercise. The cognition here represents the personal mastery of some knowledge about physical exercise. Knowledge is the basis and prerequisite for forming attitudes and beliefs, and it also causes behavioral changes. Therefore, the importance of this indicator is the first among personal factors. "Physical exercise has a great influence on my advancement,""I can get praise from others when I do physical exercise," and "I can get a lot of fun in physical exercise." These three factors can be summarized as Individual participation in physical exercise, motivation, and physical exercise self-efficacy.¹¹ The motivation for physical exercise is the possibility of physical exercise. Some teenagers will promote their conscious participation in sports to achieve certain goals, such as losing weight, strengthening their physical fitness, and wanting to master certain sports skills. Whether you can get support in sports and experience sports fun will affect your self-efficacy in physical exercise and affect youth physical exercise. "The sports skills I master can make me participate in physical exercise well"This factor is also an important factor that affects young people's participation in physical exercise. It affects young people's self-efficacy. Therefore, the mastery of motor skills is a factor that affects youth physical exercise. "My body is very suitable for me to do physical exercise" this factor is also very important because different physical conditions and physical fitness will also have different degrees of influence on individuals participating in physical exercise.

Analysis of the impact of school factors

It can be seen from the model that the school factors that affect young people's physical exercise mainly have four observation variables, namely "I have sufficient time for me to exercise," "School physical education teachers have a great influence on my participation in physical exercise," and "School leaders Attaches great importance to sports" and "our school has sufficient venues for us to exercise," the path coefficients of these four observed variables are 0.56, 0.82, 0.65 and 0.63 respectively. From the perspective of the path coefficient, the school physical education teacher's influence on youth physical exercise is the most important among the school factors, and the other three factors should also become school factors that affect youth physical exercise.

The factor "I have enough time for me to take physical exercises" has a certain impact on the physical exercise of young people because young people are more stressed in learning, and teachers and parents have higher requirements for children's academic performance, which may squeeze Students' spare time and vacation time, which in turn leads to teenagers not being able to do better physical exercises. "The school physical education teacher has a great influence on my participation in physical exercise" This factor is mainly the influence of the physical education teacher on the students, and it is also the most important factor in the school. The students are in the middle school stage, the concept of sports values is not deep, and the sports skills are not mastered. In this period, the sports teacher's value can be reflected because the attitude, behavior, mastery of sports skills, and students' evaluation can all be reflected. Directly or indirectly affect students' participation in physical exercise. "School leaders attach great importance to sports." The degree of importance school leaders attach to sports affects sports activities, sports facilities, and the school's sports atmosphere. If school leaders fail to pay attention to sports, school sports classes and sports activities will be reduced accordingly. There will be insufficient sports facilities and funding, which will directly affect students' interest in physical exercise and their participation in physical exercise. "Our school has sufficient venues for us to exercise" is to emphasize the impact of exercise venues on youth physical exercise.¹² Exercise venues are the basis and guarantee for students' physical exercise. Insufficient exercise venues will directly affect students' physical exercise in school. Studies have shown a very close relationship between students' satisfaction with school sports facilities and their motivation for physical exercise. When school sports facilities are sufficient, the proportion of students doing physical exercise increases significantly.

Analysis of the impact of social factors

It can be seen from the model that there are four observed variables in the social factors affecting youth physical exercise. They are "there are more public sports facilities and fee-charging stadiums around the residence" and "the residents around the residence have a high degree of participation in physical exercise,""You can get professional guidance when you exercise around your residence," and "The news media has a lot of propaganda on sports."The path coefficients of these four indicators are 0.61, 0.72, 0.76, and 0.73, respectively. It can be seen that among the social influencing factors, the two factors of "being able to obtain professional guidance when exercising around the residence" and "the news media promotes sports strongly" are the most important.

"There are more public sports facilities and fee-paying stadiums around the residence" This factor is to consider the impact of sports facilities and sports clubs around the community on the physical exercise of young people. Community sports facilities resources are an important guarantee for community residents to carry out physical exercises. Whether the sports facilities are perfect or not directly affects community residents' participation in physical exercises. "The residents around the residence have a high degree of participation in physical exercise." This factor mainly influences the community physical exercise atmosphere on the physical exercise of young people. The more people participate in physical exercise, it will create a good physical exercise atmosphere and attract more young people. The factor "be able to get professional guidance when exercising around the residence" reflects the influence of community professionals' guidance on youth physical exercise. The factor "the news media has a lot of propaganda on sports" has a lot to do with promoting personal physical exercise values and interest in physical exercise. The propaganda of sports by the news media can make individuals have a deeper understanding of the value and benefits of participating in physical exercise. Simultaneously, the shaping of sports stars by the media can also have a star effect, allowing young people to become interested in physical exercise.

CONCLUSION

The influencing factors of youth physical exercise involve family, society, school, and oneself. Among them, family factors have the greatest impact on youth physical exercise, and personal factors are the second, school factors, and social factors are the third. Among family factors, the biggest influence on youth physical exercise is "parents' support for youth," followed by "parents' awareness of physical

exercise" and "parents' exercise habits." Among the personal factors, the individual is the main body participating in physical exercise. "Personal sports values" and "personal awareness of physical exercise" have the greatest impact on youth physical exercise, followed by "mastery of sports skills," "exercise motivation and self-achievement" Sense" etc. Among the school factors, the school is a place for teaching and educating people, and the factors that have a greater impact on students' physical exercise are "the guidance of school teachers to students' sports values," "the requirements for physical exercise and the school's physical exercise atmosphere" and so on. Among the social factors, "social media's propaganda of sports" is an important factor affecting youth physical exercise, followed by "the atmosphere of physical exercise around the residence,""sports facilities around the residence," and "whether professional community sports guidance is available" etc. Among the factors affecting youth physical exercise, school factors and social factors have the largest interaction, followed by family factors, personal factors, social factors, and personal factors.

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REFERENCES

- Hamby S, Taylor E, Smith A, Mitchell K, Jones L, Newlin, C. New measures to assess the social ecology of youth: A mixed-methods study. J Community Psychol. 2019;47(7):1666-81.
- Ince ML. Supporting learning of practitioners and early career scholars in physical education and sports pedagogy. Sport, Education and Society. 2019;24(6):584-96.
- Donohue B, Gavrilova E, Strong M, Allen DN. A sport-specific optimization approach to mental wellness for youth in low-income neighborhoods. European Physical Education Review. 2020;26(3):695-712.
- 4. Vella SA. Mental health and organized youth sport. Kinesiology Review. 2019;8(3): 229-36.
- Tozetto AB, Milistetd M, Collet C. Iha T, Anello JL, Nascimento JV. Basketball coaches: the challenges of practice in youth sports training. Cuadernos de Psicología del Deporte. 2019;19(1): 291-301.
- Lin Y. The effect of physical fitness training activities on physical fitness in different ecological environment. Ekoloji. 2019;28(108):1871-5.
- 7. Baker C, Courtney P, Kubinakova K, Crone D, Billingham D. Assessing the broader social outcomes of a community health programme through a social-ecological framework. International Journal

of Health Promotion and Education. 2020;58(3):137-51.

- Reverdito RS, Galatti LR, Strachan L, Scaglia AJ, Paes RR. Coaching and continuity make a difference: competence effects in a youth sport program. Journal of Physical Education and Sport. 2020;20(4):1964-71.
- Hunt SE. Prospects for Kurdish ecology initiatives in Syria and Turkey: Democratic confederalism and social ecology. Capitalism Nature Socialism. 2019;30(3):7-26
- Horton P. The bullied boy: masculinity, embodiment, and the gendered social-ecology of Vietnamese school bullying. Gender and Education. 2019;31(3):394-407.
- Smith AL, Erickson K, Malete L. Advancing youth sport scholarship: selected directions and considerations. Kinesiology Review. 2019;8(3):269-77.
- 12. Narushima M, Wong JH, Li AT, Bhagat D, Bisignano A, Fung KP, et al. Youth perspectives on sexual health education: Voices from the YEP study in Toronto. The Canadian Journal of Human Sexuality. 2020;29(1):32-44.