

A Comparative Study of College Students' Attitude to The Sunny Sports in the Exercise Stages

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Abstract—This paper studies college students' attitude to The Sunny Sports in different stages of exercise behavior based on the trans-theoretical model of exercise behavior and the attitude theory of social psychology. The results show that: first, totally, college students' attitude to The Sunny Sports in the different stages of exercise behavior is very prominent ($P < 0.005$) with a trend of first upward and then downward; second, with the progress of exercise behavior stages, there is a uprising trend of cognitive and behavioral dimensions in both pre-contemplation stage and contemplation stage. The score is highest in preparation stage, and decreases in both action and insistence stages. The overall trend is similar to the reserved "U" curve. In emotional dimension, the score of satisfaction in all three aspects increases with the progress of exercise behavior stages (the average value of 3.5), that means the receptors have a satisfactory attitude toward the emotional dimension during the policy implementation process; third, in different stages of exercise behavior of the two comparing P-R phase has a significant difference ($P < 0.01$), C-R and P-A stage there are also differences.

Keywords—The Sunny Sports; exercise; attitude; trans-theoretical model

I. INTRODUCTION

With the increasingly declining of physical health of teenagers of China in recent years, Ministry of Education, General Administration of Sport of China and the Central Committee of the Communist Young League jointly issued the Decision of Central Government about Development of Sunny Sports for Hundreds of Millions of Students (hereinafter referred to as the Decision), also known as "Sunny Sports Policy" on December 20, 2006. It was pointed out in the [2007] No. 7 document issued by the State Council that "widely

develop sunny sports, encourage students to go to playground, get close to nature, walk into the sunshine, guarantee each student to participate in extracurricular athletics for at least three times each week and guarantee students to exercise for one hour each day" [1]. The comprehensive implementation of "sunny sports policy" not only needs the vigorous propaganda and promotion of policy maker and the high attention of policy executors but also relies on the attitude toward the policy of students, the objective of implementation of policy. The attitude of students towards sports and exercise plays crucial role in implementation of sunny sports policy. Therefore, understanding the current situation of implementation of "sunny sports policy" from the perspective of attitude of students toward "sunny sports policy" can not only help the policy makers to better improve policies, but also can help the policy executor to implement the policies in a more efficient mode.

Up to now from the issuance of "sunny sports policy", there has been large quantity of related studies. However, there are few studies aiming at the attitude of policy executor on policies. At the same time, with the introduction of domestic scholars of trans-theoretical model, the studies related to change stage of exercise has been gradually becoming the hotspot of sport exercise behaviors of China [2]. However, currently there are no scholars studying the attitude of college students to sunny sports based on difference exercise behaviors. This paper combines trans-theoretical model and the theory of social psychology attitude and carries out studies by aiming at attitudes of college students to sunny sports policy at different exercise behavior stages to understand the change rule of the attitudes of college students at different exercise behavior stages to policies from three dimensions including awareness of students on the understanding of policies, emotions and

behaviors. This paper also sets out from the attitudes of students at different exercise behavior stages on sunny sports policy to analyze the obstruction in the progress of implementation of national sunny sports policy and propose corresponding solutions so as to provide reference for the better implementation of our national school sports policies.

II. STUDY METHOD

A. Object of Study

The objects of study are the undergraduate students from three colleges in Shanxi Province. Total 600 questionnaires were issued with 598 collected. After removing the invalid questionnaires, there were total 574 valid samples, including 286 male students, accounting for 49.8% of total samples and 288 female students, accounting for 50.2% of total samples; they are all undergraduates, including 151 freshmen, 140 sophomores, 141 junior and 141 senior.

B. Measurement Tool

The data collection adopts questionnaire method. There are total 21 questions being designed in the questionnaire to investigate the attitudes of college students to sunny sports policy from three perspectives, including: the awareness, emotion and behavioral intention of sunny sports policy. a reliability coefficient is 0.744-0.845. The measurement during exercise behavior stage refers to the exercise stage scale proposed by Cardinal (1995). After being revised according to the operational definition of this study, the scale is: "the regular exercise means the planned physical activities for health promotion, such as walk, jogging, ball sports and other activities. The effective exercise shall refer to the exercise which is done for 3-5 times a week and lasts 20 minutes each time and can make you sweat. According to this definition, whether you have done regular exercise: ① Yes, I have kept such exercise for over 6 months. ② Yes, I have kept such

exercise for less than 6 months. ③ No, I am now doing certain exercise, which is irregular. ④ No, but I am about to starting exercising. ⑤ No, and I have not planned to start exercising." [4]

C. Data Analysis Method

The data statistics uses SPSS for Windows Version 19.0. Data analysis includes: ① descriptive statistical analysis; ② adopting One-way ANOVA of SPSS to compare the differences of attitudes to sunny sports policy of college students at 5 different exercise behavior stages.

III. RESULTS AND ANALYSIS

A. Division of Physical Exercise Behavior Stages

The exercise behavior stage is one of the indicators for division of exercise behavior changes that was proposed in the trans-theoretical study of exercise behaviors of Sonstroem in the late 1980s. The trans-theoretical model divides exercise behavior changes into five stages which mainly include: pre-contemplation stage, contemplation stage, preparation stage, action stage and insistence stage [5]. As shown in Fig.1, the transfer from pre-contemplation stage to contemplation stage of individuals is because the individuals have the need of physical exercise; the transfer from contemplation stage to preparation stage is the transition stage from activation of exercise intention of individual to gradual putting into practice; the transfer from preparation stage to action stage means that the exercise behavior intention of individual is put into actual exercise behaviors when the conditions permit; the transfer from action phase to insistence stage means that the individual has experienced the benefits from physical exercise and the self-efficacy of exercise and exercise commitment have been enhanced and the individual has cultivated the habit of physical exercise[6].

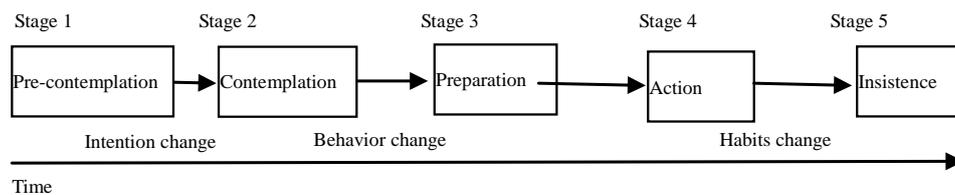


Fig. 1. Change stages of physical exercise behavior.

The different exercise behavior stages of the samples are investigated according to above theory and it is known from the investigation that the 574 objects are unevenly distributed in the five change stages of exercise behavior (as shown in "Table I"). There are 33 in pre-contemplation stage (those who have not done regular physical exercise and are not intended to), accounting for 5.7% of all students; there are 71 in contemplation stage (those who have not done regular physical exercise but are about to), accounting for 12.4% of all students; there are 278 in preparation stage (those who have participated in certain exercise but are irregular), accounting for 48.4% of all students; there are 111 in action stage (those who have done regular physical exercise for less than 6 months), accounting

for 19.3% of all students; there are 81 in insistence stage (those who keep exercising for over 6 months), accounting 14.1% of all students. We can see from data analysis that there are about 80% of students in exercise state, however most of them are in irregular exercise state. And we can also see that the students do have the intentions for physical exercise and they just have insufficient frequency and time. Meanwhile, there are still less than 20% of students showing insufficient positivity in physical exercise.

TABLE I. DISTRIBUTION OF SAMPLES AT DIFFERENT EXERCISE BEHAVIOR STAGES

	Pre-Contemplation Stage	Contemplation Stage	Preparation Stage	Action Stage	Insistence Stage	Total
Number of students	33	71	278	111	81	574
Percentage	5.7%	12.4%	48.4%	19.3%	14.1%	100%

B. Theory of Social Psychology Attitudes

Attitude is the stable mental disposition held by individuals to specific targets (person, opinion, emotion or incidents, etc). Such mental disposition contains the subjective assessment of individuals (whether pros and cons) and the behavior tendency incurred therefrom [7]. According to the theory of social psychology attitudes, attitude is consistent and fixed comprehensive psychological tendency of people to certain object and is a kind of inner mental structure consisting three components including awareness, emotion and behavior intention [8]. As shown in "Fig.2", by referring to this theory, we think that the study of mentality essence of the attitude of college students to sunny sports shall also carry out analysis on the three mental components including awareness, emotion and behavior intention that mutually differ, impact and penetrate.

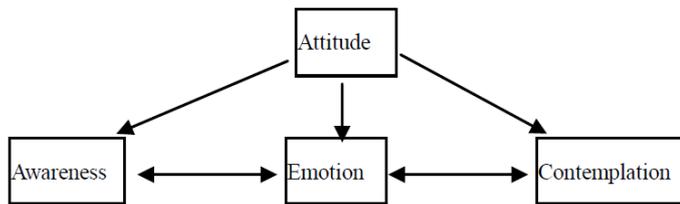


Fig. 2. Composition of attitude.

By conducting study and analysis to the data of total score of college students' attitude to sunny sports at different

exercise behavior stages (as shown in "Table II"), it can be seen from "Table II" that the variance test results indicate significance of different exercise stages on the total score of attitude to sunny sports ($P < 0.005$) and indicate that the total score of attitude present the trend of rising first and then decreasing. In the comparison between adjacent stages (P-C, C-R, R-A, A-M, P-R, C-A, R-M, P-A, C-M and P-M), we can see that the difference between P-R stages is the largest ($P < 0.01$); there is also difference between C-R and P-A stages ($P < 0.05$). Through data analysis, we can see that the total score of students' attitude to sunny sports policy presents continuous rising trend with the constant progress of exercise behavior stages, which however, slightly declines in the insistence stage. This indicates that the general attitude is relatively neutralizing during early exercise behavior stage because the unclear exercise intention of students causes low attention of students on sports policy; during preparation stage, students are interested in the various sports activities that they are about to participate in and have the most positive attitude to policies. In the change between action stage and insistence stage, the individual can experience the sense of achievement and fun of exercise in physical exercise and the self-efficacy of exercise becomes higher and higher and the students gradually cultivate the habit of physical exercise. With the deepening of physical exercise and habit of exercise, students will propose higher requirements on the exercise process and effects. When such requirements cannot be met, it will inevitably cause the disappointment of students on the policy and cause the down attitude.

TABLE II. VARIANCE TEST (ONE-WAY ANOVA) FOR THE TOTAL SCORE OF ATTITUDE TO THE POLICY AT DIFFERENT EXERCISE BEHAVIOR STAGES

	Pre-contemplation (P)	Contemplation (C)	Preparation (R)	Action (A)	Insistence (M)	Total	F	Post Hoc (Tukey)
Total score of attitude	3.502 ±0.22	3.679 ±0.16	3.934 ±0.08	3.913 ±0.14	3.811 ±0.156	3.856 ±0.058	4.446 **	C-R*; P-R**; P-A*
Total score of awareness	3.456 ±0.58	3.648 ±0.70	3.900 ±0.68	3.870 ±0.75	3.772 ±0.70	3.819 ±0.71	4.486 ***	C-R*; P-R**; P-A*
Total score of emotion	3.414 ±0.27	3.516 ±0.23	3.783 ±0.11	3.814 ±0.19	3.770 ±0.2	3.733 ±0.08	2.409 *	
Total score of contemplation	3.803 ±0.35	3.986 ±0.18	4.231 ±0.09	4.194 ±0.16	4.034 ±0.19	4.141 ±0.07	3.427 **	P-R*

^a Note: "*" : 0.05 horizontally significant; "***" : horizontally significant; "****" : 0.001 horizontally significant

C. Comparative Analysis on the Awareness on Sunny Sports Policy at Different Exercise Behavior Stages

We can see from "Table III" that the variance test results show that different exercise behavior stages have significance on the difference in awareness on sunny sports, especially have significance on the aspect of identification of implementation and effects ($P < 0.005$). And the identification on three aspects

all present rising trend at pre-contemplation and contemplation stages and the score is highest in preparation stage, and decreases in both action and insistence stages. The overall trend among various stages is similar to the "∩" distribution. In the comparison between adjacent stages (P-C, C-R, R-A, A-M, P-R, C-A, R-M, P-A, C-M and P-M), the identification on three aspects has difference in P-R stage. Thereinto, the

difference in P-R stage of effect identification is the largest ($P < 0.01$); the difference at P-R stage in policy identification and implementation identification ($P < 0.05$). At the same time, the C-R stage of implementation and P-A stage at C-R stage also have significance ($P < 0.05$). Through data analysis, we can see that the analysis of cognitive dimension on sunny sports policy of students also has difference and the difference on the aspects of policy implementation and effect identification is the largest. In term of the policy, due to insufficient publicity or promotion strength, only a few of students know well about sunny sports policy. Therefore, the awareness of students on

aspects of meaning, feasibility and necessity of policy at different exercise behavior stages also has difference; meanwhile, the difference in the attention of executor during development process of sunny sports activities, the form, times, time and implementation, etc of activities is the largest, because: firstly, the students in different exercise behavior stages have different attention on sunny sports activities; secondly, the students in different exercise stages have different expectations on the activities; thirdly, the manifestation of implementation effects of sunny sports is more obvious on the students who participate in such activities.

TABLE III. VARIANCE TEST (ONE-WAY ANOVA) ON THE COGNITIVE DIMENSION OF POLICY AT DIFFERENT EXERCISE BEHAVIOR STAGES

	Pre-contemplation (P)	Contemplation (C)	Preparation (R)	Action (A)	Insistence (M)	Total	F	Post Hoc (Tukey)
Policy identification	3.74	3.94	4.15	4.10	4.01	4.07	2.834	P-R*
	±0.29	±0.19	±0.08	±0.15	±0.17	±0.06	*	
Implementation identification	3.09	3.17	3.52	3.51	3.45	3.44	3.835	C-R*
	±0.25	±0.19	±0.1	±0.17	±0.17	±0.07	**	
Effect identification	3.53	3.83	4.03	4.00	3.86	3.95	3.709	P-R**; P-A*
	±0.25	±0.18	±0.09	±0.16	±0.17	±0.06	**	

Note: "*" : 0.05 horizontally significant; "**" : 0.01 horizontally significant; "***" : 0.001 horizontally significant.

D. Comparative Analysis on Emotion Toward Sunny Sports Policy at Different Exercise Behavior Stages

We can see from "Table IV" that the variance test results show that difference exercise behavior stages have difference in the total score of satisfaction of sunny sports policy and the satisfaction of implementation ($P < 0.05$). And the score of satisfaction on three aspects presents rising trend with the progress of stages. And in the comparison between adjacent stages (P-C, C-R, R-A, A-M, P-R, C-A, R-M, P-A, C-M and P-M), it is found that only C-R stage has obvious difference in the satisfaction of implementation ($P < 0.05$). At the same time, as can be seen from the table, the overall mean value is about

3.5, which indicates that the students are relatively satisfied with the experience in emotional dimension of policy during implementation of policy. With the progress of different exercise stages, the satisfaction of students on the policy is constantly rising during the gradual understanding process but slightly decreases at the insistence stage of exercise. After cultivation of physical exercise habit, when the demands of students on the form and content of development of sunny sports activities and the hardware facilities for physical exercise cannot be satisfied, it will inevitably cause the disappointment of students about policy and cause the decline of total score of attitude.

TABLE IV. VARIANCE TEST (ONE-WAY ANOVA) ON THE EMOTION DIMENSION OF POLICY IN DIFFERENT EXERCISE BEHAVIOR STAGES

	Pre-contemplation (P)	Contemplation (C)	Preparation (R)	Action (A)	Insistence (M)	Total	F	Post Hoc (Tukey)
Policy satisfaction	3.3636	3.6901	3.8237	3.9189	3.7407	3.7875	2.0108	
	±0.38	±0.27	±0.12	±0.2	±0.23	±0.09		
Implementation satisfaction	3.3636	3.3380	3.7842	3.7297	3.7778	3.6934	3.0570	C-R*
	±0.39	±0.28	±0.13	±0.23	±0.22	±0.09	*	
Result satisfaction	3.5152	3.5211	3.7410	3.7928	3.7901	3.7178	1.0815	
	±0.33	±0.26	±0.13	±0.23	±0.23	±0.09		
Total score of satisfaction	3.4141	3.5164	3.7830	3.8138	3.7695	3.7329	2.4085	
	±0.27	±0.23	±0.11	±0.19	±0.2	±0.08	*	

Note: "*" : 0.05 horizontally significant; "**" : 0.01 horizontally significant; "***" : 0.001 horizontally significant

E. Comparative Analysis on the Sunny Sports Behavior in Different Exercise Stages

We can see from "Table V" that the variance test results show that different exercise behavior stages have significant difference on the aspect of attitude and behavior of sunny sports and the total score of behavior as well as service and

participation ($P < 0.01$). And the four aspects of behavior all present rising trend at pre-contemplation stage and contemplation stage and the score in preparation stage is the highest but decreases in both action stage and insistence stage. The overall trend among various stages is similar to the "∩" distribution. In the comparison between adjacent stages (P-C, C-R, R-A, A-M, P-R, C-A, R-M, P-A, C-M and P-M), it can

be seen that service and participation have significance in P-R stage ($P < 0.05$) and meanwhile participation also has significance in P-A stage ($P < 0.05$). Through data analysis, the students can acknowledge aspects including the obedience of sunny sports policy and exercise from action dimension which means that the students can accept the sunny sports policy. However, there is still difference in the service and participation of sunny sports activities; on one hand, it shows

that the students still do not have enough dedication spirit and service awareness; on the other hand, it also shows that relevant leaders do not have sufficient attention and cause weak charisma of activities. The form and contents and other aspects of sunny sports activity are still not rich enough to better arouse the interest of students, therefore students are still not positive in participation behavior.

TABLE V. VARIANCE TEST (ONE-WAY ANOVA) ON ACTION DIMENSION OF POLICY AT DIFFERENT EXERCISE BEHAVIOR STAGES

	Pre-contemplation (P)	Contemplation (C)	Preparation (R)	Action (A)	Insistence (M)	Total	F	Post Hoc (Tukey)
Obedience	4.061	4.085	4.237	4.180	4.012	4.166	1.209	
	±0.38	±0.19	±0.11	±0.19	±0.22	±0.08		
Service	3.545	3.901	4.180	4.108	3.877	4.052	3.692	P-R**;P-A*
	±0.44	±0.24	±0.12	±0.21	±0.28	±0.09	**	
Participation	3.636	3.930	4.216	4.198	4.074	4.124	3.602	P-R**;P-A*
	±0.48	±0.24	±0.11	±0.19	±0.21	±0.08	**	
Exercise	3.970	4.028	4.291	4.288	4.173	4.223	1.984	
	±0.37	±0.21	±0.11	±0.18	±0.21	±0.08		
Total score	3.803	3.986	4.231	4.194	4.034	4.141	3.427	P-R*
	±0.35	±0.18	±0.09	±0.16	±0.19	±0.07	**	

^a. Note: “*” : 0.05 horizontally significant, “**”:0.01 horizontally significant, “***”: 0.0001 horizontally significant

IV. DISCUSSION

A. Rule and Essence of Changes of College Students’ Attitude to Sunny Sports Policy in Different Exercise Stages

With the development of exercise behavior stage, the total score of attitude to sunny sports in different exercise behavior stages present the trend of rising first and slightly decreasing later. The awareness and action dimension of students on the attitude to sunny policy all present rising trends in pre-contemplation and contemplation stage and the score in preparation is the highest but slightly decreases in both the action stage and insistence stage. The overall trend among various stages is similar to the “∩” distribution. According to the data analysis, the author thinks that the reasons causing this change trend are mainly as follow: I. originate from the law of cognition of people for things. At the early development stage of new things, people usually are full of desire for exploration for such new things and want to get close to new things but don’t dare to try. The attitude in such period is in a relatively lower state; then interests are aroused with the contact and therefore the attitude in this stage becomes more positive; then some new expectations are generated during the further understanding process; when the expectation becomes higher and higher but cannot be completely met in reality, the attitude will go down. II. Physical exercise behavior disconnects with awareness and the condition where the awareness and action of college students in sports is relatively prominent. On one hand, college students highly identify with the idea of “one-hour exercise per day, work for fifty years in health, living a happy life” and “sports should become a part of daily life of college students”, on the other hand, they lack the enthusiasm in participating in physical activities on action dimension[9]. Therefore, they usually will loss the power for participation

after keeping exercise for certain period. III. Along with the participation in sunny sports activities and the gradual transition of exercise behavior stages, the students who have reached the exercise insistence stage have formed the good exercise habits and the lag in the times, forms and contents of sunny sports activities required by such students will cause changes of attitudes.

B. Problems Reflected in Study and Reasons of Problems

Though the study on change rules of college students’ attitude to sunny sports policy in different exercise behavior stages, we also find some problems existing in the process of development and implementation of sunny sports activities: first, the “sunny sports policy” was greatly promoted at early stage after being issued, however the attention of the whole society on “sunny sports policy” gradually declines when time goes by. Second, the publicity of colleges of “sunny sports policy” is insufficient which causes the low cognition degree of students on “sunny sports policy”. In this investigation and study, there are about half of students not understanding the contents of “sunny sports policy”. Third, the data study also reflect that on the implementation of “sunny sports policy”: firstly, the sufficient activity time cannot be guaranteed; there are only the specific activities including school sports meeting and student club, etc; secondly, the sunny sports activity advocate to develop rich sports activities and the interests of students in sports are also impacted by various kinds of subjective and objective factors. The sunny sports activities organized lack fun and attraction and become formalistic. Many schools adopt the form the morning running to meet the requirement of temporary exercise while students do not like such form of exercise which causes negative emotion of students. Fourth, the attention of school leaders directly determines the development conditions of sunny sports

activities. The attention of school leaders is the key of development of such activities; establish the sunny sports activity objective system of school; establish the assessment and reward and punishment system; enhance the input in hardware facility of school and improve the use efficiency of stadium [10].

C. Guidance Meaning on Actual Works

Through the comparative study on students' attitude to sunny sports in different exercise behavior stage, we learn that the policy maker shall consider the attitude of policy receivers during policy execution process. "Mass sports concept is indifferent; in real life, people just focus on the sports competitions of a few people but ignore the health activities for most people. When reflecting in colleges and reflecting on students, the fact is that we cannot guarantee the one hour physical exercise every day up to now. Such phenomenon of ignoring the extracurricular activities of mass college students undoubtedly reflects the indifferent mass concept on sports while the concept guides and determines the actions and the results. Wrong concepts must impact the students' attitude to sports [11]; aiming at the students in different exercise behavior stages, different measures and methods should be adopted during implementation process of sunny sports activities. However, currently the development of sunny sports activities adopts the mode of "equal treatment" for the students in all exercise stages. For the students in pre-contemplation stage and contemplation stage, we should urge them to understand sunny sports and make them willing to participate in sunny sports activities and change their enthusiasm into actions. For the students in action stage, we should effectively improve their experience in participation process and enable them to obtain more sense of identity, sense of achievement and joy in participation of the activities. For the students in insistence stage, exercise has become a habit and we should try our best to meet their demands on fields, equipment and facilities and improve their enthusiasm of participating in sunny sports activities.

V. CONCLUSION AND SUGGESTIONS

A. Conclusion

The difference in total score of college students' attitude to sunny sports in different exercise behavior stages has significance ($P < 0.005$), and the total score of attitude presents the trend of rising first and then slightly decreasing. It shows that there is difference in the awareness and demands of college students on sunny sports policy in different exercise behavior stages manifested in the attitude to sunny sports.

With the progressive development of exercise behavior stages, the score of students' attitude to sunny sports policy in pre-contemplation and contemplation stages all presents rising trend on the dimension of awareness and action. The score in preparation stage is the highest and slightly decreases in both action and insistence stages. The overall trend among various stages is similar to the "∩" distribution. While the score of satisfaction on the three aspects of emotion dimension all presents rising trend with the progress of exercise behavior stages and the overall mean value is about 3.5, which indicates

that the receivers are satisfied with the experience on emotion dimension during implementation process of the policy.

In the comparison between two different exercise behavior stages, P-R stage has significant difference ($P < 0.01$) and there is also difference in C-R and P-A stages ($P < 0.05$). This indicates that the students' attitude to sunny sports policy during the process from pre-contemplation stage (about to start physical exercise) to preparation stage (participate in certain exercise, which is irregular) in the exercise behavior stages will change along with the understanding of related activities and demands of fields and facilities.

B. Suggestions

The related leaders of school shall enhance the implementation and publicity of sunny sports policy and increase the times of sunny sports activities in the school year to guarantee more students to know and understand the policy.

Aiming at exercising participants in different stages, it is suggested to set up targeted activities in the implementation process of sunny sports activities. For example, urge the students in pre-contemplation stage to understand sunny sports and promote the participation enthusiasm of students; improve the sports experience of students in action and insistence stages in the participation process of sunny sports activities.

Further, it is suggested to deepen and enrich the contents of sunny sports activities and vigorously improve the various sports fields, equipment and facilities to guarantee the smooth launch of sunny sports activities.

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