

# Practical Exploration of Psychological Intervention for Teenagers' Physical Exercise through the Construction of Outdoor Camp Education Model

Xiaoyin Wei<sup>1</sup>, Hongping Wei<sup>1,\*</sup>, Ning Song<sup>2</sup>

<sup>1</sup>*Department of Physical Education, Chengdu University of Information Technology, Chengdu, Sichuan, China*

<sup>2</sup>*Chengdu Swan Lake Primary School, Chengdu, Sichuan, China*

*\*Corresponding Author*

**Abstract:** To address the issues of insufficient motivation, anxiety, and social avoidance in teenagers' physical exercise, this study explores the intervention value of outdoor camp education to support the healthy physical and mental development of teenagers. Through literature review, the relevant theories were sorted out. Combined with questionnaire surveys and in-depth interviews, the current psychological status of teenagers was investigated. Case studies were selected to analyze the intervention strategies and effects. The results show that after participating in this educational model, teenagers' intrinsic motivation for physical exercise, resilience, and anxiety have improved, and their social initiative has increased. It can be seen that outdoor camp education can effectively improve the psychological state of teenagers in physical exercise. Schools and society should integrate resources to promote its application.

**Keywords:** Outdoor Camp Education; Model Construction; Teenagers' Physical Exercise; Psychological Intervention; Practical Path

## 1. Introduction

### 1.1 Research Background and Motivation

Contemporary adolescents face multiple challenges in their physical and mental health development. Insufficient participation in physical exercise and imbalanced psychological states form a negative cycle that influences each other. Some adolescents have weak willingness to participate in physical exercise due to lack of interest or psychological concerns, and long-term lack of exercise further aggravates their problems such as insufficient emotional regulation ability and difficulty in social

adaptation. This situation not only restricts the improvement of adolescents' physical fitness but also poses a potential threat to their mental health growth, urgently requiring innovative educational forms to break this cycle[1]. Outdoor camp education, with its reliance on natural environments, experiential activity design, and multi-dimensional interactive scenarios, provides a unique path to address the psychological issues of adolescents in physical exercise. Compared with traditional physical education, its advantage lies in integrating physical practice into real-life situations, allowing adolescents to experience the joy of sports in nature exploration and teamwork, gradually alleviating exercise anxiety and enhancing exercise confidence, and thereby establishing positive psychological and behavioral habits towards physical exercise. Against this background, systematically constructing an outdoor camp education model and deeply exploring its intervention mechanism on adolescents' physical exercise psychology has become an important topic for promoting the coordinated development of adolescents' physical and mental health and innovating physical education practices[2].

### 1.2 Panoramic Insights into Domestic and Foreign Research

#### 1.2.1 Foreign research status

Foreign outdoor camp education has a long development history and has formed a mature theoretical system and practical paradigm. Research mainly focuses on the intrinsic connection between camp education and adolescent psychological development, confirming its positive impact on the psychology of physical exercise. Some studies point out that the "challenge-breakthrough" activity design in camps can help adolescents

accumulate a sense of achievement in sports and gradually transform it into a continuous motivation for exercise; other studies focus on the role of social interaction, believing that team sports in camps provide a safe social space for adolescents, which helps to alleviate social anxiety and enhance the willingness to participate in sports in team collaboration. At the same time, foreign research has established a relatively complete theoretical framework, such as designing camp activity processes based on the experiential learning cycle theory to ensure the synchronous advancement of physical practice and psychological guidance, providing systematic theoretical support for the psychological intervention function of camp education[3]. These research results and practical experiences provide important references for domestic research, but need to be adapted and adjusted in line with local culture and educational background.

#### 1.2.2 Domestic research status

Domestic outdoor camp education has developed rapidly in recent years under policy promotion and has gradually become an important carrier for quality education and sports education innovation. Early domestic research mainly focused on model introduction and case analysis. With the deepening of research, some scholars have begun to pay attention to its psychological intervention value, but there are still obvious deficiencies overall. The research perspective is relatively fragmented, mostly focusing on the short-term effects of single activities, lacking systematic exploration of "model construction - psychological intervention - practical path"; the psychological intervention goals are not clear enough, and precise plans have not been designed for specific psychological problems in adolescents' physical exercise; the practical guidance is weak, and there is a disconnection between theoretical achievements and grassroots educational needs, making it difficult to form a replicable and promotable operational system[4].

#### 1.2.3 Research review

Overall, foreign research provides mature theoretical frameworks and practical experiences, but they need to be localized in line with the psychological characteristics and educational environment of domestic adolescents. Although domestic research has gradually paid attention to the psychological

intervention function of camp education, there is still room for improvement in terms of systematicness, targeting, and practicality. Therefore, based on domestic realities, constructing a scientific outdoor camp education model and exploring its intervention path on adolescents' physical exercise psychology has important theoretical supplementation and practical guidance value.

### 1.3 Research Design and Methodological Approach

#### 1.3.1 Research objectives

This research focuses on addressing psychological issues related to physical exercise among teenagers, setting three main goals: first, to clarify the intrinsic connection between outdoor camp education and the psychological aspects of teenagers' physical exercise, and to construct a systematic theoretical analysis framework; second, to develop a four-in-one model of outdoor camp education that integrates "goals, content, instructors, and support" based on the current domestic practice; third, to explore the psychological intervention paths and strategies of this model, verify its effectiveness through practice, and form a replicable practical plan.

#### 1.3.2 Research methods

The research comprehensively employs multiple methods to ensure the scientificity and reliability of the conclusions. Through literature review, it systematically sorts out relevant theories and research results at home and abroad, clarifying core concepts and research foundations; by means of questionnaires and in-depth interviews, it investigates the current situation of teenagers' physical exercise psychology and the implementation difficulties of camp education, grasping the core issues and demands; using practical intervention methods, it applies the constructed model to the teenage group, comparing and analyzing the changes in psychological states before and after the intervention; combining case analysis methods, it extracts the intervention characteristics of different types of camp education projects, and summarizes practical experiences that can be learned from[5].

## 2 Outdoor Camp Education and Teenagers' Physical Exercise Psychology

### 2.1 In-Depth Analysis of Outdoor Camp

## Education

### 2.1.1 Definition of core concepts

Outdoor camp education is an experiential educational form that relies on the outdoor natural environment and targets teenagers. It achieves the goals of "improving physical fitness, shaping psychological qualities, and developing social adaptability" through the design of diverse sports activities, practical tasks, and social interaction projects. Its core elements include: relying on natural scenes in terms of environment, which is different from indoor and campus environments; focusing on sports activities in terms of content, integrating multi-dimensional educational goals; and pursuing the all-round development of physical, psychological, and social adaptability in terms of goals, rather than single skill training.

### 2.1.2 Analysis of core characteristics

Outdoor camp education has distinct characteristics of comprehensiveness, experience, autonomy, and interactivity. Comprehensiveness is reflected in the integration of content and goals, including not only physical exercise but also modules such as natural cognition and psychological counseling, taking into account both physical and psychological development; experience emphasizes the learning process of "personal participation - direct experience - self-reflection", allowing teenagers to gain knowledge and psychological growth through practice; autonomy focuses on guiding teenagers to make independent decisions and explore, enhancing their sense of control over physical exercise; interactivity is manifested in multi-dimensional interactions among people, nature, and self, creating conditions for psychological adjustment and social skill improvement.

### 2.1.3 Interpretation of educational value

From the perspective of psychological intervention, the value of outdoor camp education is concentrated in three aspects: first, it stimulates exercise motivation by designing interesting and contextualized activities, allowing teenagers to experience the joy of sports and achieve a transformation from external drive to internal love; second, it regulates negative emotions, as the healing nature of the environment and the positive effects of exercise can effectively alleviate anxiety, fear of difficulties, and other emotions; third, it improves social relationships, as

teamwork and support in activities help teenagers establish positive peer relationships, enhance social confidence, and make physical exercise an important link in social interaction[6].

## 2.2 Analysis of Psychological Traits of Teenagers' Physical Exercise

### 2.2.1 Staged characteristics of teenagers' psychological development

Teenagers are in a critical period of physical and mental development, with distinct staged characteristics in cognition, emotion, and social development, which directly affect their psychological aspects of physical exercise. Cognitively, the maturity of abstract thinking enables them to form self-capability evaluations; frequent setbacks in sports can easily lead to negative self-perceptions. Emotionally, they have large fluctuations and sensitive self-esteem, reacting strongly to others' evaluations; negative evaluations can easily trigger anxiety and inferiority. Socially, the importance of peer relationships becomes prominent; they long for recognition and are prone to social avoidance when unable to integrate into the group[7]. The psychological aspects of adolescent physical exercise can be analyzed from four core dimensions: the exercise motivation dimension is divided into intrinsic motivation (interest-driven) and extrinsic motivation (externally pressured), with many current adolescents being driven mainly by extrinsic motivation and lacking a lasting willingness to exercise; the emotional state dimension covers positive emotions (pleasure, excitement) and negative emotions (anxiety, fear), with negative emotions directly reducing exercise participation; the social interaction dimension involves peer collaboration, competition, and communication with teachers, where positive interaction enhances the sense of gain from exercise, while negative interaction weakens enthusiasm; the self-perception dimension is the evaluation of one's own physical ability, with positive perception enhancing confidence and negative perception leading to a vicious cycle[8].

### 2.2.3 The positive effects of physical exercise on adolescent mental health

Scientific physical exercise has multiple positive impacts on adolescent mental health. In terms of emotion regulation, exercise promotes the secretion of neurotransmitters, effectively

alleviates negative emotions, and enhances pleasure; in terms of self-perception, the improvement of motor skills and the achievement of goals help adolescents accumulate a sense of accomplishment and improve self-perception; in terms of social relationships, team activities create social opportunities, helping adolescents learn communication and collaboration skills and promoting harmonious interpersonal relationships. These positive effects provide a practical basis for the psychological intervention function of outdoor camp education.

## **2.3 The Theoretical Linkage between the Two**

### **2.3.1 Experiential learning theory**

Experiential learning theory holds that learning is a cyclical process of "concrete experience - reflective observation - abstract conceptualization - active experimentation", providing a core framework for the psychological intervention mechanism of outdoor camp education. In camp activities, adolescents gain concrete experiences through physical practice, sort out their psychological feelings and problems through reflection, form abstract cognition, and then verify and optimize through practice. This process not only improves motor skills but also gradually improves psychological states, such as overcoming fear and enhancing confidence.

### **2.3.2 Social learning theory**

Social learning theory emphasizes the role of observational learning and self-efficacy. In outdoor camp education, adolescents form imitative learning by observing the positive behaviors of peers and mentors (such as persistence in the face of challenges), and each sports breakthrough enhances self-efficacy, reinforcing the belief that "I can do it", and thus are more willing to participate in physical exercise. This theory explains the positive impact of role models and successful experiences on exercise psychology in camp education.

### **2.3.3 Mental health education theory**

Mental health education theory emphasizes the psychological intervention logic of "safe environment - emotional expression - cognitive restructuring"[9]. Outdoor camp education creates an inclusive and supportive activity environment, allowing adolescents to express

negative emotions during exercise; with the guidance of mentors, cognitive restructuring is carried out to help them correct negative cognitions such as "I'm not good at sports" and establish positive psychological suggestions. This theory provides direct guidance for the psychological intervention strategies of camp education.

## **3. Adolescent Physical Exercise Psychology and Outdoor Camp Education**

### **3.1 Insights into the Psychological State of Adolescent Physical Exercise**

There are multiple problems in the current psychological state of adolescent physical exercise. In terms of exercise motivation, some adolescents lack intrinsic motivation and participate mainly due to external pressure, with weak willingness to exercise actively; in terms of emotional state, some adolescents have anxiety and fear towards physical exercise, avoiding sports due to concerns about poor performance or encountering setbacks; in terms of social interaction, some adolescents show withdrawal in team activities, are reluctant to communicate and collaborate, and have difficulty obtaining social support; in terms of self-perception, some adolescents form negative evaluations due to insufficient sports ability, falling into a cycle of "not practicing leads to poor performance, and the worse the performance, the less willing to practice"[10]. The emergence of these problems is related to multiple factors: at the family level, some families have a weak sports atmosphere and pay insufficient attention to the psychological needs of adolescents; at the school level, traditional physical education teaching forms are monotonous and fail to take into account individual psychological differences; at the social level, there is insufficient popularization and support for adolescent physical exercise psychology, and a comprehensive support system has not been formed.

### **3.2 Analysis of the Development Trend of Outdoor Camp Education**

In recent years, outdoor camp education in China has shown a rapid development trend. The policy support has been strengthened, and the number of camps and types of courses have gradually increased, covering multiple fields such as outdoor sports, survival skills, and

teamwork. It has become an important direction for the innovation of quality education and physical education[11]. However, there are still many deficiencies in practice: the course design lacks systematicness, the physical practice and psychological guidance are disconnected, and the psychological problems of teenagers during exercise have not been effectively addressed; the professional quality of the teaching staff is insufficient, and some instructors only have sports skills but lack psychological knowledge and intervention capabilities; the safety management mechanism is not perfect, and the risk prevention and control ability needs to be improved, which affects the safety of activities and the stability of the psychological intervention effect[12].

### **3.3 Evaluation of the Psychological Intervention Effect of Existing Camp Education on Teenagers' Physical Exercise**

Existing high-quality camp projects have shown positive psychological intervention effects on teenagers' physical exercise, such as enhancing social willingness through team sports and improving sports confidence through progressive challenges. However, overall, there is a significant imbalance in the intervention effect: some camps lack clear psychological intervention goals, and the activity design is not targeted enough, resulting in insignificant intervention effects; some camps have limited professional capabilities of the teaching staff, making it difficult to accurately identify and meet the psychological needs of teenagers; most camps lack long-term tracking mechanisms and only focus on short-term effects, making it impossible to assess the continuous impact on exercise psychology. These problems indicate that existing camp education still needs to be further optimized in terms of model construction, teacher training, and effect evaluation[13].

## **4. Innovative System for Outdoor Camp Education**

### **4.1 Goal Orientation: Clear Educational Objectives**

The goal setting of the outdoor camp education model should form a multi-level system, taking into account both physical and psychological development. At the psychological intervention level, the core goals include: stimulating

intrinsic exercise motivation, promoting the transition of teenagers from passive participation to active exploration; enhancing resilience to setbacks, alleviating exercise anxiety and fear of difficulties; improving social willingness and collaboration skills, and enhancing the quality of interaction in team sports; guiding positive self-perception, establishing a positive connection between physical exercise and psychological growth, and forming sustainable exercise habits. The goal setting should be adapted to the age and psychological characteristics of teenagers to ensure feasibility and specificity.

### **4.2 Content Framework: Rich Course and Activity Design**

Course and activity design should revolve around the dual main lines of "physical practice + psychological guidance" to form a systematic content system. The physical practice module covers a variety of outdoor projects, balancing fun and challenge, such as hiking, rock climbing, orienteering, team ball games, etc., allowing teenagers to experience the joy of sports in diverse ways; the psychological guidance module integrates content such as emotion management, social skills, and self-awareness, using forms such as theme sharing, scenario simulation, and reflection logs to help teenagers sort out their psychological experiences during sports and regulate negative emotions. The course content should focus on progression, gradually transitioning from basic difficulty to advanced challenges to avoid causing fear due to excessive difficulty; at the same time, it should take into account individual differences and design activities of different difficulty levels to ensure that each teenager can gain a sense of achievement in appropriate challenges[14].

### **4.3 Teacher Training: Strengthening the Construction of the Teaching Staff**

The professionalism of the teaching staff is the key to the model's psychological intervention effect. Camp instructors need to possess multi-domain knowledge and skills. In terms of sports skills, they should be proficient in teaching methods for various outdoor sports projects and be able to guide teenagers to complete movements correctly; in terms of psychology, they should understand the psychological development laws of teenagers and master

professional skills such as psychological assessment, emotion counseling, and social guidance, and be able to accurately identify and intervene in psychological problems during exercise; in terms of safety management, they should have the ability to predict risks and handle emergencies to ensure the safe conduct of activities[16]. To enhance the quality of the teaching staff, a systematic training system should be established, covering sports skills, psychological knowledge, and safety management; a complete assessment and incentive mechanism should be established to continuously improve the professional capabilities of the teaching staff and build a "sports skills + psychological literacy + safety management" composite teaching team.

#### **4.4 Operation Guarantee: Improving Operation and Safety Management**

Scientific operation management and comprehensive safety guarantee are the foundation for the stable operation of the model. In operation management, a closed-loop system of "course development - activity implementation - effect evaluation" should be constructed: in the development stage, courses should be designed based on the psychological needs and educational goals of teenagers; in the implementation stage, process management should be emphasized, and the activity rhythm and difficulty should be dynamically adjusted to adapt to the psychological state of teenagers; in the evaluation stage, multi-dimensional feedback should be used to evaluate the effect of psychological intervention and provide a basis for course optimization[17]. In safety management, a full-process mechanism of "prevention - monitoring - emergency" should be established: in the prevention stage, potential hazards in the camp environment and equipment should be comprehensively investigated; in the monitoring stage, the physical and psychological states of teenagers should be closely monitored in real time to promptly identify abnormalities; in the emergency stage, a complete plan should be formulated, and professional equipment and personnel should be equipped to ensure the proper handling of emergencies. At the same time, safety awareness should be strengthened and integrated into the entire activity process to create a stable environment for psychological intervention.

## **5 Intervention Path and Strategies**

### **5.1 Personalized Intervention: Precise Guidance Based on Individual Differences**

There are significant individual differences in the psychology of teenagers' sports exercise, and personalized intervention is needed to meet different needs. First, through preliminary research and psychological assessment, individualized archives of teenagers should be established to clarify their exercise motivation, emotional state, social tendencies, and other characteristics; secondly, design adaptive plans based on individual differences. For instance, for teenagers with high anxiety, start with low-difficulty projects to gradually build confidence; for those with social avoidance, arrange small team activities to reduce social pressure. Finally, continuously track psychological changes and adjust the plan based on feedback to ensure the intervention is precise and effective. Personalized intervention should avoid a one-size-fits-all approach and focus on teaching according to individual aptitude, allowing each teenager to achieve psychological growth at a pace that suits them and gradually improve their mental state during exercise[18].

### **5.2 Scenario Creation: Creating an Immersive Sports Exercise Atmosphere**

Scenario creation is an important means to stimulate exercise interest and regulate psychological state. Outdoor camp education can leverage the advantages of the natural environment to create an immersive atmosphere from multiple dimensions: in terms of spatial scenarios, use natural scenes such as mountains, forests, and lakes to design exercise routes, allowing teenagers to relieve anxiety through contact with nature; in terms of task scenarios, design story-driven and challenging exercise tasks, such as "Natural Exploration Treasure Hunt" and "Team Collaboration Challenges", to encourage active participation driven by tasks; in terms of interactive scenarios, create an inclusive and supportive team atmosphere, encourage mutual encouragement and sharing, reduce the psychological pressure caused by negative evaluations, and enhance psychological security[19]. An immersive atmosphere can enable teenagers to quickly engage in exercise, reduce psychological concerns, and gradually establish a positive

perception of sports exercise under the dual drive of nature and fun.

### **5.3 Team Collaboration: Utilizing Team Power to Promote Psychological Growth**

Team collaboration activities provide a social interaction platform for teenagers and promote psychological growth through exercise. In activity design, focus on the collaborative and complementary nature of tasks, allowing teenagers to recognize their own value and the strengths of their peers in achieving common goals, and enhance a sense of team belonging; during the guidance process, pay attention to the psychological dynamics in team interactions, promptly resolve conflicts, guide positive communication, and help teenagers learn effective social skills; after the activities, organize sharing sessions to review the gains and insights from collaboration, strengthen team awareness, and enhance social confidence. Team collaboration not only enhances exercise effects but also enables teenagers to learn understanding and tolerance through interaction, improve social anxiety, and form a positive team exercise psychology.

### **5.4 Feedback Adjustment: Establishing a Dynamic Feedback and Adjustment Mechanism**

Dynamic feedback and adjustment are key to continuously optimizing intervention effects. It is necessary to establish multi-subject and multi-dimensional feedback channels: from the perspective of teenagers, collect activity experiences and psychological feelings through regular interviews and questionnaires; from the perspective of teachers, analyze problems and experiences in the intervention process through teaching logs and observation records; from the perspective of parents, understand the psychological changes of teenagers in exercise outside the camp through home-school communication, and evaluate long-term effects[20]. Systematically analyze feedback information, identify the root causes of problems, and adjust course design, activity arrangements, and guidance strategies in a targeted manner to form a "feedback-analysis-adjustment-optimization" virtuous cycle, continuously improving the scientificity and effectiveness of psychological intervention.

## **6 Practical Effect Verification**

### **6.1 Research Design and Implementation**

The practical intervention selects teenagers in the critical stage of psychological development in sports exercise, applying the constructed outdoor camp education model to intervention practice. Before the intervention, psychological assessment is conducted to clarify the initial psychological state of teenagers, ensuring the representativeness of the intervention subjects; during the intervention, activities are carried out strictly in accordance with the model, emphasizing teacher guidance, safety assurance, and process management to ensure the effective implementation of the plan; after the intervention, psychological state is reassessed, changes are compared and analyzed, and in-depth interviews are conducted to understand subjective feelings, comprehensively evaluating the intervention effect.

### **6.2 Data Collection and Analysis**

Data collection adopts a combination of qualitative and quantitative methods: quantitative data comes from psychological assessment scales, quantifying psychological changes by comparing scores before and after the intervention; qualitative data comes from interview records, observation logs, reflection logs, etc., extracting key themes through text coding, and analyzing changes in psychological experience and cognition. Data analysis emphasizes logical rigor, combining quantitative results with qualitative conclusions to comprehensively assess the intervention effect and avoid the limitations of interpreting single data points.

### **6.3 Results Presentation and Discussion**

#### **6.3.1 Presentation of intervention effects**

The adolescents participating in outdoor camp education have shown multi-dimensional positive changes in their attitudes towards physical exercise. In terms of exercise motivation, their intrinsic motivation has significantly increased, and their willingness to actively engage in physical exercise has notably improved. Their interest in sports has shifted from "passive acceptance" to "active exploration", and some adolescents even organized their peers to carry out outdoor sports activities on their own after the camp activities ended. In terms of emotional state, exercise anxiety and fear of difficulties have been

effectively alleviated, and their tension when facing sports challenges has decreased. They can accept temporary failures with a more peaceful mindset and actively try to adjust their methods to overcome difficulties. In terms of social interaction, their participation enthusiasm in team sports has significantly increased, and the behaviors of actively communicating and collaborating with peers and sharing sports experiences have increased. Their resistance to "integrating into the group" has decreased, and they have gradually established stable peer support relationships through sports. In terms of self-perception, their evaluation of their own sports abilities has become more objective and positive. They no longer deny their overall abilities due to deficiencies in a single sports event but can discover their own advantages, such as "Although I'm not fast at running, I have better balance when rock climbing", and thereby establish a more comprehensive self-perception.

#### 6.3.2 Discussion on the causes of the effects

The generation of the above intervention effects is attributed to the precise alignment of the constructed outdoor camp education model with the psychological needs of adolescents for physical exercise. From the perspective of model design, the dual course of "physical practice + psychological guidance" enables adolescents to improve their sports skills while providing space for psychological growth, avoiding the limitation of "emphasizing skills over psychology" in traditional physical education. The four-in-one system of "goals - content - teachers - support" ensures the systematicness and stability of psychological intervention. For instance, the guidance of professional teachers promptly alleviates the negative emotions of adolescents, and the complete safety guarantee reduces their concerns during sports, making it easier for them to immerse themselves in the experience. From the perspective of intervention paths, personalized tutoring meets the individual differences of adolescents, avoiding the failure of intervention due to a "one-size-fits-all" approach. Immersive scenario creation allows adolescents to feel the value of sports in nature and fun, weakening the negative perception of "exercise = task". Team collaboration and dynamic feedback form a psychological growth loop of "practice -

reflection - optimization", gradually consolidating positive exercise psychology through continuous interaction. At the same time, the practice also identified some areas for improvement: First, the psychological state of some adolescents slightly declined after the camp activities ended due to the lack of a continuous outdoor exercise environment and peer support, indicating that the sustainability of the intervention effect relies on a long-term support system. Second, a few extremely introverted adolescents still have participation barriers in team activities, and personalized guidance strategies need to be further refined. Third, the depth of psychological intervention by some camp teachers is still insufficient, and their ability to identify the hidden psychological needs of adolescents needs to be enhanced, requiring more professional psychological training.

## 7 Conclusion and Outlook

### 7.1 Research Conclusions

Theoretical level: The intrinsic connection between outdoor camp education and the psychological aspects of adolescent physical exercise has been clarified. It is evident that experiential learning theory, social learning theory, and mental health education theory are the core theoretical links between the two. Through the path of "concrete experience - reflection and internalization - practical application", outdoor camp education can positively intervene in the psychological aspects of adolescent physical exercise from four dimensions: exercise motivation, emotional state, social interaction, and self-perception, providing a new theoretical perspective for the integration of physical education and mental health education. Model construction level: A four-in-one outdoor camp education model has been successfully constructed, focusing on "goal - content - teachers - guarantee". The goal dimension focuses on the multi-dimensional improvement of adolescent physical exercise psychology; the content dimension forms a systematic curriculum system of "physical practice + psychological guidance"; the teacher dimension builds a composite team of "physical skills + psychological literacy + safety management"; the guarantee dimension establishes a support system of "operation



management + safety prevention and control". The four dimensions are interconnected to ensure the effective implementation of psychological intervention functions. Practical path level: Four core intervention paths have been distilled: personalized intervention, situational creation, team collaboration, and feedback regulation. Personalized intervention provides precise guidance based on individual differences; situational creation creates immersive experiences by leveraging the natural environment; team collaboration promotes psychological growth through social interaction; feedback regulation ensures intervention effectiveness through dynamic optimization. These four paths complement each other and can be flexibly combined based on actual needs. Empirical effect level: Through practical verification, the constructed outdoor camp education model can effectively improve the psychological state of adolescent physical exercise, showing positive effects in stimulating intrinsic exercise motivation, alleviating negative emotions, enhancing social willingness, and optimizing self-perception. This proves the model's scientificity and feasibility, providing a reference for adolescent physical education practice.

## 7.2 Reflections on Existing Problems and Improvement Suggestions

### 7.2.1 Reflections on existing problems

Although the research has achieved phased results, there are still three areas of deficiency: First, the universality of model promotion needs to be enhanced. Current practices are mainly concentrated in camps around cities, with insufficient adaptability to rural areas and remote mountainous regions. Adjustments should be made based on the natural environment and educational resources of different regions. Second, the long-term mechanism for intervention effects is not yet complete. There is a lack of long-term tracking of adolescent physical exercise psychology, making it difficult to assess the model's continuous impact on their growth. Third, the teacher training system still needs to be improved. The quantity and quality of composite teachers are insufficient to meet the needs of large-scale practice, and there is a lack of unified qualification certification standards, affecting the stability of teacher professionalism.

### 7.2.2 Improvement suggestions

Promote local adaptation of the model: Optimize model design based on regional characteristics. In rural areas, low-cost and easy-to-operate camp activities can be developed, such as field hiking and agricultural tool operation experiences. In remote mountainous areas, local cultural sports projects can be integrated into camp courses to enhance cultural identity and participation willingness. At the same time, collaborate with local education departments and non-profit organizations to establish a resource sharing platform to provide camp education teachers and materials for rural and remote areas. Establish a long-term tracking mechanism: Build a three-party linkage long-term tracking system of "camp - school - family". After the camp activities, the camp regularly feeds back the psychological changes of adolescents to schools and families. Schools integrate camp education content with physical education and mental health courses to consolidate intervention effects. Families create a good sports atmosphere and encourage adolescents to continue participating in outdoor exercise, forming a complete chain of "camp intervention - school consolidation - family continuation" to ensure the sustainability of psychological intervention effects. Improve the teacher training system: Collaborate with sports colleges and psychology colleges in universities to establish a specialized direction for "outdoor camp education", cultivating professionals with interdisciplinary knowledge; formulate unified standards for teacher qualification certification, clearly defining assessment requirements for sports skills, psychological knowledge, and safety management; establish a training platform combining online and offline methods, providing theoretical courses online and organizing practical simulation exercises offline, while building a teacher exchange community to promote experience sharing and enhance the overall quality of the teaching staff.

### 7.3 Future research directions outlook

Deepen theoretical research: In the future, theoretical research can be expanded from a multidisciplinary perspective. For instance, combine neuroscience to explore the physiological mechanisms by which outdoor camp education affects the exercise psychology of teenagers, and analyze the impact of natural environments and sports practices on the brain's emotional centers through brain science

experiments. Integrate sociology to study the psychological differences among teenagers from different social classes and family backgrounds in camp education, providing more precise theoretical support for model optimization. Expand application scenarios: Explore the deep integration of the outdoor camp education model with school physical education, after-school services, and study tours. For example, incorporate camp education's contextualized activity designs into school physical education courses, conduct small-scale outdoor sports practices in after-school services, and add psychological intervention theme modules to study tours, achieving the regular and diverse application of camp education and expanding the scope of beneficiaries. Innovate through technology integration: Leverage digital technology to enhance the precision and interest of the model. For instance, develop a psychological assessment system for teenagers' sports exercise, generating personalized intervention plans through AI algorithms; use virtual reality (VR) technology to simulate outdoor camp scenarios, allowing teenagers who cannot participate in on-site camps to have immersive experiences; monitor teenagers' exercise status and physiological indicators in real time through wearable devices such as sports bracelets, providing data support for psychological intervention and achieving a deep integration of "technology + education". International exchange and localized innovation: Strengthen exchanges and cooperation with foreign outdoor camp education institutions, introducing advanced theories and practical experiences, but avoiding direct copying. Instead, combine the psychological characteristics and cultural background of Chinese teenagers for localized innovation. At the same time, summarize domestic excellent practice cases to form a theoretical system and practical model of outdoor camp education with Chinese characteristics, promoting it to the international stage and providing a Chinese solution for global teenagers' sports exercise psychological intervention.

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