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Research Article

Modelling the Impact of Chess Game on Students' Sports Accomplishment

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Tibetan chess, a traditional Chinese ethnic sport, is a treasure of Tibetan culture. It takes various forms, adopts different playing methods, and involves a simple suite of equipment to interest people and impart wisdom. In order to study the positive impact that Tibetan chess exerts on students' sports accomplishment, cognition, interest, intelligence, inheritance, and changes in their awareness of the protection of traditional sports in western Tibetan areas, this study uses correlation and single factor analysis to compare relevant indicators and dimensions. At the same time, it constructs regression models and path models for teaching experiments, investigations, and analyses. Research shows that the learning of Tibetan chess has obvious and significant influence on promoting students' sports accomplishment in western Tibetan areas. Further research finds that the traditional sports of ethnic minorities, combined with the development of Tibetan chess and students' sports accomplishment, establish the cognition of traditional sports culture, cultivate lifelong sports awareness, and allow students to enjoy the physical and mental education brought by ethnic cultures.

1. Introduction

With the progress of human society and the improvement of living standards, people have a further understanding of the advancement of sports accomplishment. In May 2016, the General Office of the State Council of China issued the *Opinions on Strengthening School Sports to Promote the All-round Development of Students' Physical and Mental Health*. It proposes, at the national level, an idea of comprehensively improving the physical education of students, signifying the transformation of China's physical education from academic theory to practice. The national policy emphasizes the status and great importance of "sports accomplishment" from the macrolevel. In November 2018, the Ministry of Education of the People's Republic of China once again stated that physical accomplishment is the core literacy of students; physical homework and examinations are also required, which raises the importance of sports accomplishment to an unprecedented height. The "Healthy China 2030" Planning Outline issued by the State Council specifically requires the comprehensive improvement of national health literacy, vigorous development of distinctive sports events with different regional characteristics, and enhancement of ethnic and traditional folk sports. In June 2021, Tibetan chess was listed as one of China's fifth batch of representative projects of national intangible cultural heritage. The improvement of sports accomplishment plays an extremely important role in the development of students' personality and dynamic health, laying a solid theoretical foundation for the development of lifelong sports. Current domestic research on sports accomplishment focuses more on theory than practice. It only focuses on the physical level, rarely combines with traditional sports of ethnic minorities, and pays little attention to the psychology, cognition, and emotion of students in ethnic areas.

China is a multiethnic country of 56 ethnic groups, of which 55 are minorities. These minorities have developed their respective traditional sports culture with distinct ethnic characteristics. Rich in cultural heritage and social functions, the development of traditional sports has significant

political, economic, cultural, and spiritual value. It is mainly aimed at internal and external fitness. Most of the events are not restricted by age, time, venue, equipment, etc., so they are suitable for people of all ages and can promote people's physical and mental health. Thus, protecting and inheriting the traditional sports of ethnic minorities will promote the diversified development of China's sports. In a bid to study traditional sports, this paper factors in the special geographical location of Tibetan areas in the exploration of the impact of Tibetan chess on students' sports accomplishment.

2. Literature Review

It is widely acknowledged in the academic community that sports accomplishment refers to the level of sports culture and a person's training in sports. Based on logical analysis of sports accomplishment, a scholar believes that it is a comprehensive quality formed by an individual's congenital inheritance and acquired physical education, covering sports knowledge, ability, awareness, emotion, and conduct [1]. With reference to similarities and differences between the core sports accomplishment and physical education, a scholar analyzes valuable skills and influences individuals obtain through physical activities at different stages [2, 3]. Some put forward, from the perspective of formal logic, the shaping influence of family, physical education at school, and social environment on the comprehensive culture internally pursued by physical and spiritual culture and also explore the formation of students' sports accomplishment [4, 5]. Some, based on the perspective of sports accomplishment training, discuss the value of knowledge, knowledge learning, and sports literacy [6, 7]. It is considered that sports should be integrated into the training needs of college students' core literacy, to focus on their development of academic growth and physical fitness; also, an overview of physical literacy is outlined [8, 9]. Some scholars analyze methods and measures to improve students' sports accomplishment [10, 11]. Others, from three dimensions, physical, mental and spiritual, help structure and improve professional qualities and abilities of coaches [12, 13]. Meanwhile, sports participation, self-efficacy, and self-achievement are analyzed from the perspective of sports and sports psychology and their literacy relationship [14, 15]. From children's physical condition and their physical, cognitive, and emotional fields, the feasibility and elements of physical fitness are analyzed, and health literacy, related behaviors, and their impact on mental health literacy are also discussed [16–18].

Tibetan chess has unique characteristics (Table 1). The first one is that chess sets can change randomly. Chessboards and pieces are so simple and casual that you can often draw on local resources. Branches, pebbles, fruit seeds, even sheep manure can be used as chess pieces, and chessboards can be casually drawn on the ground, slates, wooden boards, or animal skins with a carbon stick. The second is flexibility and humanization. There are many types of Tibetan chess, unique in game methods, and flexible in playing (Table 2). The boards and pieces are not fixed, and the difficulty can be adjusted by changing the number of board paths and pieces at will according to the needs of two players. The methods are as follows. First, chessboards can be shared. A certain chessboard of Tibetan chess can be used for several chessboards. For example, the chessboards of "King Chess" and "Control Death" can be shared, so can "Mimang" and "Jiuqi." Second, the number of chessboards and pieces can be adjusted according to the level of players or the playing time. For example, there are many kinds of chessboards for "Jiuqi," such as 10×10, 12×12, and 14×14. The third is the combination of interest and intelligence. Chess skills are various, different chesses for people of different ages and cultural levels. There are chesses reflecting people's resistance to the natural environment and the ruling class, wars between tribal countries, filial piety, love and etiquette, and religious beliefs, etc. Each has the function of entertainment, knowledge, and etiquette.

For example, a certain number of pieces in "Jiuqi" forming a specific formation can sweep the board. The implication is to teach people that no matter what harsh environment and enemies they encounter, as long as they are united, there is nothing that cannot be defeated. The fourth is distinctive Tibetan characteristics. The "white stone worship" of Tibetan ancestors can be seen from the rules of "white first and black second" in "Mimang" and "Jiuqi." Techniques such as sewing boots, yak collars, treasure bottles, auspicious knots, flying sculptures, and fur coats are the reflection of Tibetan ancestors' production tools, natural environment, religious beliefs, aesthetic methods, and value pursuits. When playing Tibetan chess "Mimang" and "Jiuqi," the ultimate goal is not to occupy the ground or capture the opponent's pieces, but to make the pieces into a special auspicious figure to show their superior skills. Different from the Han nationality's "watching the game without saying anything," Tibetan chess has a distinctive feature of its culture. Instead, watchers join in the game, fiercely discussing and offering ideas and suggestions and even ridiculing each other. It thus can be seen that Tibetan chess reflects its nomadic culture of survival philosophy: living by water and grass and distinctive features of the snow-covered area culture, that is, accommodating themselves to circumstances, peace, and harmony. All of these show Tibetans' spirit of pursuing elegance, open-mindedness, and humor.

In summary, research on physical literacy is ample. However, most scholars discuss its cultivation, evaluation system, and development path and seldom involve the analysis of the correlation between traditional sports of ethnic minorities and physical literacy. This paper mainly focuses on the promotion of Tibetan chess to sports accomplishment. By using correlation analysis afterwards, it discusses the educational function, role, and social effect and analyzes the role and value of Tibetan chess learning on sports accomplishment.

3. Research Objects and Methods

3.1. Research Objects. The research objects in this paper are mainly students from Tibetan areas in western China, from which 60 students are randomly selected. A questionnaire is conducted on them with the recovery rate of 100%, and validity and reliability of the questionnaire are tested.

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Table 1: Comparison of Tibetan chesses.

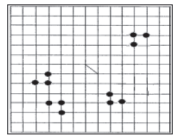
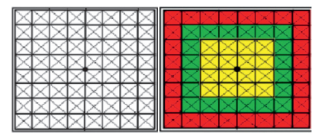
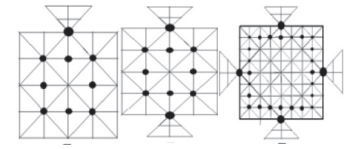
Type	Jiuqi, Mimang	Zijiu (Pinch chess)	King chess (one king chess, double king chess, and four king chess)
Chess board			
Method	"Jiu" in the Tibetan language means success, and its form varies according to the number of chessboards, ranging from as few as 6×6 to as many as 20×20	Five lines, seven lines, and nine lines are odd-numbered squares; the chessboard has horizontal, vertical, and diagonal lines; the intersection of all lines is used for chess moves; there are no strict rules for "Zijiu" chess pieces whose number is determined by the number of intersections of the chessboard	Simple, diverse, and popular; the chessboard is composed of straight and horizontal lines; different chesses have different numbers of "royal palaces"
Opening	White first and black second	White first and black second	"King" moves first

Table 2: Features of Tibetan chess.

Number	Features	Contents
1	Random and gradual change of chess sets	Branches, pebbles, fruit seeds, and even sheep manure can be used as chess pieces
2	Flexibility and humanization of chess	The chessboard can be used for several kinds of chesses; the chessboards of "King chess" and "Control Death" can be shared; "Mimang" and "Jiuqi" can be shared
3	Combination of fun and intelligence	There are chesses reflecting people's resistance to the natural environment, the resistance of civilians to the ruling class, wars between tribal countries, filial piety, love and etiquette, and religious beliefs, etc.
4	Distinctive Tibetan cultural characteristics	Tibetan chess, an educational sports game, has both the entertainment of the game and the competitive nature of sports; meanwhile, as a kind of folk culture, it contains rich Tibetan cultural elements; every technical rule has characteristics of traditional Tibetan culture and customs

3.2. Research Methods. This paper takes theoretical research on physical literacy as the perspective, research results, and development trends of students' exercise attitude and consciousness as the breakthrough point and focuses on the practical application value of the research. Through literature data, questionnaire survey, and logical analysis, the relevant materials are sorted and analyzed. The impact of intelligence and cognition on students' sports accomplishment is explored through experiments. It aims to combine entertaining and intellectual characteristics of Tibetan chess to explore the changes in students' attitudes and understanding of physical participation. Through the analysis of development status and functions and the correlation analysis of SPSS25.0, it will be understood whether there is a significant change in students' physical literacy before and after learning Tibetan chess.

4. Results and Analysis

4.1. Status of Tibetan Chess

4.1.1. Students' Cognition of Tibetan Chess. It can be seen from the statistical data in Table 3 that 8.33% of students are proficient in Tibetan chess, 16.67% are familiar, 26.67% know a little bit, and 48.33% do not know it at all. Most students do not know about Tibetan chess, which has a great impact on the inheritance and protection of traditional sports of ethnic minorities.

4.1.2. Students' Satisfaction with the Development of Tibetan Chess. It can be seen from the statistical data in Table 4 that most students are willing to have Tibetan chess programs in physical education; they have strong cognition and interest in traditional national sports. Among them, 61.67% are in favor, 18.33% disapproved, 6.67% not concerned, and 13.33% are casual.

4.2. The Influence of Tibetan Chess on Students' Physical Literacy

4.2.1. Changes Insports Enthusiasm, Cognition, Interest, and Intelligence and Ideology. From the statistics of paired samples in Table 5, before learning Tibetan chess, the average score of 60 students' cognition of traditional sports is 72.75, with the standard deviation being 10.831 and the standard error 1.398. After a period of learning, it has been significantly improved, reaching 80.83 points, with a standard deviation of 11.430 and a standard error of 1.476.

From the statistics of paired samples in Table 6, before Tibetan chess learning, the average score of 60 students' interest in sports is 85, with the standard deviation being

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Table 3: Students' cognition ($n = 60$).

Number	Content	Number of people	Percentage (%)
1	Proficient	5	8.33
2	Familiar	10	16.67
3	Know a little bit	16	26.67
4	Do not know at all	29	48.33

Table 4: Students' satisfaction ($n = 60$).

Number	Attitude	Number of people	Percentage (%)
1	In favor	37	61.67
2	Disapproved	11	18.33
3	Not concerned	4	6.67
4	Casual	8	13.33

Table 5: Statistics of paired samples.

Order	Content	Average value	Number of samples	Standard deviation	Average value of standard error
Before training	Cognition of traditional sports	72.75	60	10.831	1.398
After training	Cognition of traditional sports	80.83	60	11.430	1.476

8.130 and the standard error being 1.050. After a period of learning, it has been improved significantly, reaching 86.83 points, with a standard deviation of 7.755 and a standard error of 1.001.

From the statistics of paired samples in Table 7, before Tibetan chess learning, the 60 students have an average score of 65.67 for its intelligence nature, with a standard deviation of 13.260 and a standard error of 1.712. After a period of learning, the score has been significantly improved, reaching 81.58 points, with a standard deviation of 13.324 and a standard error of 1.720.

From the statistics of paired samples in Table 8, before Tibetan chess learning, the 60 students give an average score of 87.92 for the inheritance and protection awareness of traditional sports, with a standard deviation of 9.173 and a standard error of 1.184. After a period of learning, the score has been significantly improved, reaching 91.33 points, with a standard deviation of 7.471 and a standard error of 0.965.

In other words, in physical education, students who have participated in Tibetan chess learning of ethnic traditional sports have made significant improvement in the following aspects: the cognition of traditional sports, interest in sports, interest and intelligence, inheritance, and protection awareness of traditional sports.

4.2.2. Influence on Sports Enthusiasm, Cognition, Fun and Intelligence, and Ideology. According to the correlation test of paired samples in Table 9, 60 students selected obtain a relatively high score for the cognition of traditional sports before and after Tibetan chess learning. The correlation coefficient is 0.741, reaching a significant level. Through the significance test of the correlation coefficient, the sig value is 0.000, indicating that there is a high correlation between students' cognition of traditional sports and Tibetan chess learning. The score correlation coefficient of students' interest in sports is relatively high, 0.853, reaching a significant level. According to the significance test of the correlation coefficient, the sig value is 0.000, indicating that there is a high correlation between students' interest and participation in Tibetan chess learning. The correlation coefficient of students' intelligence is relatively high, up to 0.737, reaching a significant level. From the significance test of correlation coefficient, the sig value is 0.000, indicating that there is a high correlation between students' intelligence and Tibetan chess learning. The score correlation coefficient of students' inheritance and protection consciousness of traditional sports is relatively high, up to 0.703, reaching a significant level. From the significance test of correlation coefficient, the sig value is 0.000, indicating that there is a high correlation between students' inheritance and protection of traditional sports and Tibetan chess learning.

From the test table of paired sample T in Table 10, at the 95% probability level, the score difference in the cognition of traditional sports before and after training is −8.083, and the two-tailed sig is 0.000. The hypothesis that there is no difference in cognition scores before and after training can be denied. Instead, it can be concluded that significant differences exist. The difference in interest in sports before and after training is −1.833, and the two-tailed sig is 0.002. The null hypothesis that there is no score difference in interest in sports before and after training can be abandoned. Instead, it can be concluded that significant differences exist. The difference in intelligence score before and after training is −15.917, and the two-tailed sig is 0.000. The null hypothesis that there is no difference in intelligence scores before and after training can be abandoned. Instead, it can be concluded that significant differences exist. The score difference in inheritance and protection awareness of traditional sports before and after training is

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Table 6: Statistics of paired samples.

Order	Content	Average value	Number of samples	Standard deviation	Average value of standard error
Before training	Interest in sports	85.00	60	8.130	1.050
After training	Interest in sports	86.83	60	7.755	1.001

Table 7: Statistics of paired samples.

Order	Content	Average value	Number of samples	Standard deviation	Average value of standard error
Before training	Intelligence nature	65.67	60	13.260	1.712
After training	Intelligence nature	81.58	60	13.324	1.720

Table 8: Statistics of paired samples.

Order	Content	Average value	Number of samples	Standard deviation	Average value of standard error
Before training	Inheritance and protection awareness of traditional sports	87.92	60	9.173	1.184
After training	Inheritance and protection awareness of traditional sports	91.33	60	7.471	.965

Table 9: Correlation of paired samples.

Order	Content	Number of samples	Relativity	Significance
Before training after training	Cognition of traditional sports	60	.741	.000
Before training after training	Interest in sports	60	.853	.000
Before training after training	Intelligence	60	.737	.000
Before training after training	Inheritance and protection consciousness of traditional sports	60	.703	.000

Table 10: Test of paired samples.

Order	Content	Pair difference					t	Variance	Sig.(2-tailed)
		Average value	Standard deviation	Mean value of standard error	D-value 95% probability level				
					Lower limit	Upper limit			
Before training after training	Cognition of traditional sports	−8.083	8.030	1.037	−10.158	−6.009	−7.797	59	0.000
Before training after training	Interest in sports	−1.833	4.315	0.557	−2.948	−0.719	−3.291	59	.002
Before training after training	Intelligence	−15.917	9.633	1.244	−18.405	−13.428	−12.799	59	0.000
Before training after training	Inheritance and protection awareness of traditional sports	−3.417	6.606	0.853	−5.123	−1.710	−4.006	59	0.000

−3.417, and the two-tailed sig is 0.000. The null hypothesis that there is no score difference in the inheritance and protection awareness of traditional sports before and after training can be abandoned. Instead, it can be considered that significant differences exist.

It can be seen that Tibetan chess learning has indeed improved students' cognition of traditional sports, their interest in sports, their intelligence, and inheritance and protection awareness of traditional sports.

5. Conclusion

In conclusion, developing traditional ethnic Tibetan chess has a significant effect on the improvement of students'

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sports accomplishment. It is conducive to the protection, inheritance, and development of excellent traditional sports culture, promoting the unity, harmony, and progress of students of all ethnic groups. Meanwhile, it exerts a positive impact on students' sports enthusiasm, cognition of traditional sports, interest and intelligence, and inheritance and protection awareness of traditional sports.

Schools in western Tibetan areas should vigorously develop Tibetan chess, further explore and organize the sport and standardize and unify rules and methods. It not only contributes to the protection and inheritance of Tibetan chess culture but also enhances the combination of diversity and ethnicity of schools' physical education. Additionally, it promotes the development of ethnic characteristics and builds Tibetan chess into one of the featured sports in ethnic areas. Therefore, it is essential to make full use of traditional sports of ethnic minorities, combine Tibetan chess with the development of students' sports accomplishment, establish their cognition of traditional sports culture, cultivate lifelong sports awareness, and finally enjoy the physical and mental education brought by the ethnic culture.

Data Availability

The data used to support the findings of the study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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