

# Upgraded Sports Consumption Behavior of College Students: Current Characteristics and Influencing Factors

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**Abstract:** In recent years, the importance to develop sports industry has reached national level. Due to the policy dividend and continuous increasing of disposable income per capita, sports industry has speeded up and the scale of sports consumption has been expanded. Considering previous studies, this study classified the motivation of college students' sports consumption into six categories: physical product needs, health needs, conformity and comparison needs, aesthetic needs, social needs and sports achievement needs. Using a sample of 1024 college students from Guangzhou, China, this study systematically investigates the structural characteristics and influencing factors of college students' upgraded sports consumption by adopting an ordered multinomial logistic regression model. It is found that the current structure of College Students' upgraded sports consumption is characterized as intelligent, integrated and diverse, showing dynamically consistency with the development direction of sports industry. In terms of influencing factors, gender, sports awareness, sports habits and preferences, community sports participation all effect sports consumption significantly. Therefore, school and society should actively work to further enrich the sports consumption structure of college students, help them form good sports consumption values, strengthen their sports awareness and help them create lifelong sports habit. Measures that are mentioned above will provide endogenous dynamic for high-quality development of sports industry.

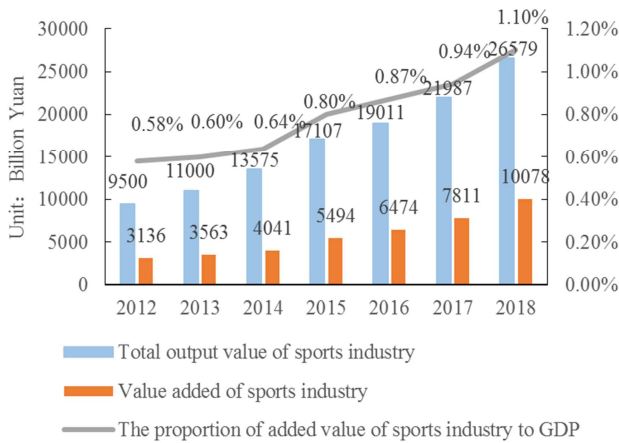
**Keywords:** Sports Industry, Sports Consumption, College Students, Influencing Factors

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## 1. Introduction

The sports industry is the future pillar industry of China [15], which represents the people's yearning for a better life. It is an inevitable requirement for vigorously developing the sports industry after the transformation of major social contradictions in the 19th National Congress of the Communist Party of China. In 2014, the State Council promulgated the "Several Opinions on Accelerating the Development of the Sports Industry and Promoting Sports Consumption" (commonly known as "Circular 46"), which raised the development of the sports industry to a national strategic level. In recent years, the state has continuously issued various policy documents, so that China's sports industry has been developing rapidly and forming a "market-led, government-driven" benign situation. In terms of

growth rate, the average growth rate of China sports industry output value from 2012 to 2018 was 19.4%, and much higher than the growth rate of domestic GDP in the same period. In 2018, the total output value of sports industry was 2657.9 billion yuan, and the added value was 1007.8 billion yuan, the industrial scale accounted for 2.89% of GDP. Although there is still a gap between China and developed countries, it still shows that the sports industry has potential of becoming a pillar industry in the future (see Figure 1). At the same time, the sports industry is highly correlated with other industries, and shows typical positive externality. Sports industry should be vigorously developed. It is of important practical significance to effectively transforming the economic growth mode and realizing the transformation of the regional economy.



**Figure 1.** Sports Industry Scale and Added Value in 2012-2018.

With the transformation of China's economic growth momentum model, the fundamental role of consumption in driving economic development is increasingly prominent. As the final form of sports demand, sports consumption is the basis for promoting the upgrading of the sports industry and achieving high-quality development. In recent years, living income continues to increase, and the demand for sports has also seen a "blowout" growth, which has brought about a continuous increase in sports consumption. It has now become an important content of modern service consumption and life service consumption [1]. From the perspective of the market equilibrium of the sports industry, sports consumption is an external manifestation of residents' sports demand, and it stimulates the endogenous driving force for the development of the sports industry from the demand side, which leads to the emergence of structural reforms on the supply side of the industry, and even determines the path and direction of the sports industry. In September 2019, the "Opinions on Promoting National Fitness and Sports Consumption to Promote High-quality Development of the Sports Industry" was issued by the State Council, emphasizing that actions which include effectively cultivating market subject, expanding sports space and developing lifelong exercise habits should be taken to promote sports consumption. In view of the differentiated physical exercise needs of different groups of people, examining their sports consumption behaviors and influencing factors can provide references from micro level for the implementation of policy documents and the expansion of sports consumption. Therefore, further attention should be paid to the research on the characteristics of sports consumption structure, logical mechanism and policy effects.

College students are the most transformative and innovative potential labor resources, and the sports consumption behavior of college students is directly related to the future development path and development momentum of the sports industry, so it has received full attention from the theorists. According to the literature, the existing investigations on college students' sports consumption behavior mainly focused on their specific spending [2], analyzed the structural characteristics of their consumption behavior [3] and then

made policy proposals which were limited in depth by using descriptive analysis only. With the development of empirical research methods, new research tools have been used to consider the sports demands of college students [4], and discuss the influencing factors [5] as well as consumption quality [6] of sports consumption behavior of college students. At present, the view of Chinese residents' sports consumption has undergone a fundamental change. The "Internet plus" technology, coupled with emerging e-sports, makes sports consumption show new characteristics and become a micro level power of sports industry's upgrading and structural optimization.

Based on the conceptual definition, sports consumption refers to the consumption of physical sports products and service products demanded by consumers in the process of participating in sports activities and watching sports competitions. Sports consumption mainly includes physical consumption and service consumption, among which service consumption can be divided into participation consumption, spectator consumption and enrichment sports consumption. From the point of view of industrial structure, sports industry usually includes sports product manufacturing and sports service industry, and generally industrial upgrading means that the proportion of sports service industry is increasing, so the upgrading sports consumption should include service sports consumption first. At the same time, the sports goods manufacturing industry is part of China's sports industry with comparative advantages, so upgrading the sports industry in no way means giving up the development of the sports goods manufacturing industry. In particular, with the widespread application of technological innovation and Internet technology, the further upgrading of sports equipment and wearable smart sports equipment has been promoted, and the consumption of these sports equipment can also be classified as upgraded sports consumption. Next, based on the definition of upgraded sports consumption, this paper will empirically analyze the current characteristics and influencing factors of college students' upgraded sports consumption behavior, in order to better optimize their sports consumption behavior and provide endogenous impetus for the sustainable upgrading of sports industry.

## 2. Sample Source and Research Methods

### 2.1. Sample Source

It mainly takes college students with non-P. E. major in Guangzhou as the research sample, and the research contents include the sport consumption structure and expenditure, sports consumption motivation, upgraded sports consumption, physical exercise habits, school sports facilities, sports service efficiency, mass sports participation and so on. The process of the studies includes granting questionnaire forms and conducting the sample survey of the students from more than ten universities and colleges, such as South China Normal University, Guangdong University of Foreign Studies, Guangzhou University, South China Agricultural University,

South China University of Technology, Jinan University, Guangdong University of Finance & Economics, Guangdong University of Finance, etc. Totally 1048 questionnaires were collected and 1024 valid ones were retrieved with the effective rate of 97.7%. Cronbach's  $\alpha$  was used to examine the internal consistency of the questionnaire. Cronbach's  $\alpha$  was 0.899, indicating that the questionnaire had high reliability and could objectively reflect the indicators.

## 2.2. Research Methods

In order to investigate the sports consumption structure of college students scientifically and comprehensively, this study classified the sports consumption based on the classification of the sports industry in the "Sports Industry Statistical Classification (2019)" (National Bureau of Statistics Order No. 26). From the perspective of providing products and services to individual consumers, 8 types of college students' sports consumption had been summarized, namely participating in sports fitness and leisure activities, renting sports venues or facilities, participating in sports education and training activities, purchasing sports media and information services, purchasing sports goods and sports-related products, and conducting sports. Sports tourism, purchase of sports health and sports rehabilitation services, purchase of sports lottery and sports insurance, among which sports tourism can be divided into viewing sports tourism and participation sports tourism according to the activity category. Each category has set up corresponding questions, including whether there is a purchase experience and the proportion of the corresponding expenditure in the monthly average expenditure. For the measurement of sports consumption motives, this article refers to the classification of sports consumption motives by researchers from home [7, 8, 9, 12] and abroad. Especially, this study sorted out and compared the Motivation Scale of Sport Consumption Scale [10] and SPEED Scale [11] to identify the dimensions of sports consumption motivation of college students in Guangzhou. Finally, it investigates the sports consumption motivation of Guangzhou college students from six dimensions: physical product needs, health needs, conformity and comparison needs, aesthetic needs, social needs and sports achievement needs. In addition, the survey also includes some specific factors that may affect sports consumption, including physical exercise habits, service efficiency of school sports facilities, and participation in mass sports activities. Next, this article will use SPSS.20 for data processing and analysis. The methods used mainly include multiple response and ordered multinomial logistic regression.

## 3. Empirical Analysis and Regression Results

### 3.1. Descriptive Statistics on Sports Consumption Behavior of College Students

#### 3.1.1. Basic Characteristics of Samples

In this survey, there are 352 male participants (34.4%) and

672 female participants (65.6%). Participants are composed of 3.4% junior college students, 92.1% undergraduate students and 4.5% graduate students. The proportion of households living permanently in urban and rural areas was 66.3% and 33.7% respectively, and the proportion of monthly average expenditure ranges from large to small is: 1000 yuan to 1500 yuan (52.3%), 1500 yuan to 2000 yuan (19.4%), 1000 yuan and below (16.1%), 2000 yuan to 2500 yuan (6.6%), 2500 yuan or more (5.5%).

#### 3.1.2. Sports Consumption Structure and Consumption Level

The questionnaire surveyed the content of college students' sports consumption expenditure and the proportion of each consumption expenditure in the monthly average expenditure. Results are shown in Table 1, showing We can see that college students' sports consumption is mainly about physical consumption, and that college students actively engages in participatory and ornamental sports consumption, but rarely involve in value-added sports consumption.

In regard to consuming content, many college students are willing to purchase sports goods and sports-related products, accounting for 78.3%. According to the survey of the reasons for purchasing sports goods, 36.6% of college students buy sports goods because 'the old one can not be used any more', and 47.5% students purchase sports equipment because of having a new interest in sports, only 10% students purchase sports goods because of the need for smart sports equipment, and 6% of college students buy sports goods because they want to follow the trend. Overall, college students are more rational in physical sports consumption, mainly in order to replace the old goods and meet their own sports interest development.

Service-oriented sports consumption mainly includes participatory, ornamental and value-added consumption. Participatory sports consumption includes participating in sports activities, renting sports venues or equipment, participating in sports education, participating in sports tourism (refers to the experiential sports tourism activities organized by travel agencies and the tourism scenic service for the purpose of sports) and purchasing sports health or sports rehabilitation services, accounting for 40.0%, 39.7%, 36.3%, 14.5% and 12.5% respectively. Ornamental sports tourism refers to watching sports events, sports festivals and sports performances. In this survey, the purchase of sports media and information services mainly refers to paying for watching sports webcasts and buying Internet sports events services. Therefore, both ornamental sports tourism and purchase of sports media or information services belong to ornamental sports consumption, accounting for 37.1% and 13.5% respectively. For participatory and ornamental sports consumption, although the scale of the consumption group of each specific consumption content is much smaller than that of the physical sports consumption, the consumption content of these two types of sports consumption is more diverse than that of the physical sports consumption, which may

disperse the consumption population. And the purchase of sports lottery or sports insurance services is called value-added sports consumption, accounting for 18.9%.

In terms of the level of expenditure, each kind of sports consumption expenditure accounts for 5% or less of the monthly average expenditure of college students, and the

higher the proportion, the fewer the students fall into this proportion. It shows that the overall level of college students' sports consumption is not high, which is directly related to the income constraint of college students, and can also reflect that college students should pay more attention to physical exercise.

**Table 1.** *Structure and Expenditure Level of College Students' Sports Consumption.*

Sports consumption categories		Frequency	percentages %	5% and below	(5%-10%]	(10%-15%]	(15%-20%]	20% above
Physical type	Buy sporting goods and sports-related products	802	78.3	52.0	16.6	4.6	1.8	3.4
	Participation in sports, fitness and leisure activities	410	40.0	24.3	11.1	2.5	1.1	1.0
	Rental of sports venues or equipment	407	39.7	31.7	6.3	1.3	0.4	0.1
Participatory type	Participation in physical education and training activities	372	36.3	21.6	8.7	2.8	1.0	2.2
	Participatory Sports Tourism	148	14.5	9.3	3.0	1.5	0.5	0.2
	Purchase of sports health and sports rehabilitation services	128	12.5	7.0	3.2	1.6	0.4	0.3
Ornamental	Ornamental sports tourism	380	37.1	27.1	6.3	2.0	8.0	1.0
	Buy Sports Media & Information Services	138	13.5	8.3	3.1	0.4	0.1	0.1
Value-added	Buy sports lottery or sports insurance	194	18.9	16.1	1.9	0.8	0.1	0.1

*Note:* The percentage interval in the fourth column to the eighth column refers to the proportion of a certain sports consumption expenditure in the monthly average expenditure.

### 3.1.3. Sports Consumption Motivation of College Students

Sports consumption is mainly motivated by material and spiritual factors, which are the driving forces of sports consumption. The survey shows that in terms of the motivation of physical consumption demand, 50.9% of college students have sports consumption in order to meet the needs of physical education, and 66.4% of college students aim to meet their own sports interests; In terms of physical and mental health demand, 54.7% of college students conduct sports consumption to prevent diseases and keep fit, while 64.1% of college students are intended to relieve stress and relax. However, 3.4% of college students believe that having sports consumption can show their economic strength and 3.6% of college students believe that sports consumption is fashionable. Those two motivations are out of conformity and comparison which are signs of dissimulation consumption. Some college students' sports consumption is out of aesthetic needs, including the appreciation of fashion beauty of sportswear and equipment, the appreciation of the beauty of sports action and the pursuit of bodybuilding, accounting for 10.8%, 9.2% and 35.0% respectively. In addition, 16.4% and 17.0% of college students spend on sports in order to increase their interaction with family and friends and expand the scope of social interaction, belonging to social needs. In addition, pursuit of sports achievements is also the reason for some college students spending on sports. 36.4% of college students spend on sports to improve sports skills, and 9.5% of college students show their sports talents through sports consumption.

The above results show that the sports consumption motivations of contemporary college students not only stay at the basic level to meet the needs of taking class and keeping

physical fitness but also pay attention to their sports interest and aesthetic needs. At the same time, some college students realized the extension value of sports consumption, such as promoting social interaction, strengthening their self-confidence and even being their long-term pursuit. Only a few college students have the motivation to follow the trend or make comparison, requiring guidance from schools and society.

### 3.2. Structural Features of Upgraded Sports Consumption of College Students

In recent years, China's sports industry system has been continuously improved and has gradually showed favorable trends, with competition performance industry and physical fitness industry as core driving forces, sports manufacturing as support, and new business forms such as sports venues, sports training, sports agency, sports media, sports tourism being developing [13, 14]. Meanwhile, Chinese current sports consumption is changing from "arbitrariness" to "professionalism" [15], from "hardware" consumption marked by sports goods to "soft" consumption marked by physical fitness industry and sports competition performance [16]. When combining previous studies' understanding [17, 18] of the specific manifestations and characteristics of sports consumption upgrades, it can be found that the main connotation of upgrading sports consumption includes obvious brand effect, technological innovation, highly participation and experiential. Based on the understanding of the above development trends and specific connotations of sports consumption, this article designed a questionnaire to measure college students' consumption characteristics. The survey results are shown in Table 2.

**Table 2.** Upgraded Sports Consumption of College Students in Guangzhou (Multiple Choice Questions).

Upgraded sports consumption items	Frequency	Percentage of the number of people (%)
Watching sports events live	258	25.2
Participate in specialized sports training	235	22.9
Purchase smart sports wearable device	286	27.9
Buy branded sports equipment	620	60.9
Buy sports app membership	121	11.8
Buy gym membership	210	20.5
Engage in relatively small outdoor sports	124	12.1
Perform relatively advanced outdoor sports	353	34.5

It can be seen from Table 2 that the number of college students who buy branded sports equipment and smart wearable device of sports is relatively large, ranking first and third respectively. It shows that in the interactive upgrading process of sports industry and sports consumption, the consumption of sports goods manufacturing industry is still the main body of college students' sports consumption behavior. At the same time, the proportion of college students who have experience of paying to watch sports events on the spot, buying membership to watch sports events on sports APP, paying for gym membership and participating in special sports training is 25.2%, 11.8%, 20.5% and 22.9% respectively, reflecting the richness of service-oriented sports consumption but also the underdevelopment of sports service industry, which based on sports competition performance, sports training and fitness. As a key factor in upgrading the sports industry, there is still much room for sports service industry to improve. In addition, relatively niche outdoor sports and relatively advanced outdoor sports accounted for 12.1% and 34.5% respectively, indicating that integrated sports consumption such as sports tourism has a huge momentum of development. In summary, the structural characteristics of college students' upgrade sports consumption are compatible with the structural characteristics of China's sports industry. The physical upgrading consumption of the sports goods

manufacturing industry is dominant. Although the upgrading consumption of the sports service industry is increasingly rich in content, its vitality and potential need to be further released. Moreover, the rise of sports tourism consumption indicates that integration with other industries is an important way to realize the upgrading of the sports industry.

### 3.3. Influencing Factors of Upgrading Sports Consumption

Upgraded sports consumption has important practical significance for optimizing the structure of sports industry and realizing the industrial upgrading. Specific to the university student group, clarifying the factors influencing college students' upgraded sports consumption can help cultivate upgraded sports consumption demand and provide important endogenous impetus for the sustainable development of sports industry in the future. This study not only consider the demographic information of college students such as gender, education, household residence and average monthly expenditure but also include the following factors into the empirical model for analysis: the types of sports preferred by college students, efficiency of sports facilities and sports services in their schools, and whether they have participated in mass sports activities. The results are shown in Table 3.

**Table 3.** Influence factor classification of upgraded sports consumption and descriptive statistics.

	Variable Name	Variable Definition	Average Value	Standard Deviation
Explanatory variables	Sex	Male=1, Female=2	1.66	0.475
	educational background	Junior college student=1, Bachelors=2, Masters or above=3	2.01	0.281
	Permanent residence of the family	Urban = 1, Rural = 2	1.34	0.473
	Average monthly expenses	1000 yuan and below = 1, more than 1000 yuan to 1500 yuan = 2, 1500 yuan to 2000 yuan = 3, 2000 yuan to 2500 yuan = 4, 2500 yuan and above = 5	2.33	1.003
	Weekly exercise frequency	Less than 2 times=1, 2 times and more=2	1.49	0.500
	Traditional Athletics	Unchecked=0, checked=1	0.85	0.360
	Entertainment and leisure	Unchecked=0, checked=1	0.31	0.461
	National Sports	Unchecked=0, checked=1	0.07	0.247
	Outdoor Sports	Unchecked=0, checked=1	0.25	0.432
	Evaluation of school sports facilities and sports service efficiency	Strongly disagree = 1, Relatively disagree = 2, Not sure = 3, Relatively agree = 4, Strongly agree = 5	27.55	5.768
Explained variables	Whether you have participated in mass sports activities	Yes=1, No=2	1.64	0.480
	The proportion of upgraded sports consumption in the total amount of annual sports consumption	10% and below=1, (10%, 20%]=2, (20%, 30%]=3, (30%, 40%]=4, (40%, 50%]=5, 50% and above=6	1.52	1.268

Since the dependent variable is an ordered multi-categorical variable, this study intends to use an ordered multinomial

logistic regression model to empirically analyze the factors influencing college students' upgraded sports consumption.

After using SPSS 20.0 for regression, the model fit information shows that the model chi-square value is 107.468, the degree of freedom is 15, and the p-value was 0.000, indicating that the model fit well and could well explain the effect of each influencing factor on the college students' upgraded sports consumption. And the parallelism test

showed that the chi-square value is 4.434, the degree of freedom is 60, and the corresponding p-value is  $1 > 0.05$ , suggesting that the regression equations are parallel to each other and it is suitable to use the ordered multinomial logistic regression process for analysis. The parameter estimation results are shown in Table 4.

**Table 4.** Estimation Results of Ordered Multinomial Logistic Regression Model of Factors Affecting the Proportion of Upgraded Sports Consumption.

Variables		Parameter Estimation	Standard error	Wald	p-value	OR value
Threshold	Ratio of upgraded sports consumption to total sports consumption expenditure last year = 1	0.168	0.684	0.061	0.806	1.183
	Ratio of upgraded sports consumption to total sports consumption expenditure last year = 2	1.078	0.685	2.476	0.116	2.939
	Ratio of upgraded sports consumption to total sports consumption expenditure last year = 3	1.421	0.687	4.282	0.039	4.141
	Ratio of upgraded sports consumption to total sports consumption expenditure last year = 4	1.663	0.689	5.831	0.016	5.275
	Ratio of upgraded sports consumption to total sports consumption expenditure last year = 5	1.900	0.691	7.562	0.006	6.686
Sex	Sex=1 (male)	0.902***	0.166	29.676	0.000	2.465
	Sex = 2 (female)	0 <sup>a</sup>	-	-	-	-
Academic qualifications	Academic degree=1 (Junior college student)	-0.115	0.514	0.05	0.822	0.891
	Academic degree=2 (Bachelors)	-0.159	0.355	0.202	0.653	0.853
	Education = 3 (Master or above)	0 <sup>a</sup>	-	-	-	-
Household permanent residence degree	Permanent household residence = 1 (city)	0.215	0.178	1.462	0.227	1.240
	Permanent household residence = 2 (rural)	0 <sup>a</sup>	-	-	-	-
Average monthly expenses	Average monthly expenses = 1 (\$1000 and below)	-0.641	0.387	2.741	0.098	0.527
	Average monthly expenses = 2 (\$1000 to \$1500)	-0.232	0.326	0.504	0.478	0.793
	Average monthly expenses = 3 (\$1500 to \$2000)	-0.063	0.348	0.033	0.857	0.939
	Average monthly expenses = 4 (\$2000 to \$2500)	0.45	0.398	1.279	0.258	1.568
	Average monthly expenses = 5 (over \$2,500)	0 <sup>a</sup>	-	-	-	-
Weekly exercise frequency	Frequency of physical activity per week = 1 (less than 2 times)	-0.749***	0.170	19.38	0.000	0.473
	Frequency of physical activity per week = 2 (2 and more times)	0 <sup>a</sup>	-	-	-	-
	Traditional Athletics = 0 (unchecked)	-0.153	0.247	0.384	0.536	0.858
	Traditional Athletics = 1 (checked)	0 <sup>a</sup>	-	-	-	-
Types of sports hobbies	Entertainment and leisure category=0 (unchecked)	-0.351*	0.184	3.646	0.056	0.704
	Entertainment and leisure category=1 (checked)	0 <sup>a</sup>	-	-	-	-
	Ethnic sports = 0 (unchecked)	-0.145	0.318	0.207	0.649	0.865
	Ethnic sports = 1 (checked)	0 <sup>a</sup>	-	-	-	-
	outdoor sports =0 (unchecked)	-0.264	0.177	2.221	0.136	0.768
sports consciousness	Whether you have participated in mass sports activities=1 (yes)	0.469***	0.161	8.450	0.004	1.598
	Whether you have participated in mass sports activities = 2 (no)	0 <sup>a</sup>	-	-	-	-
School sports facilities and service efficiency		-0.02	0.013	2.44	0.118	0.980

Note: (1) \*\*\*, \*\*, \* indicate significant at 0.01, 0.05 and 0.1 levels respectively. (2) a: Because this parameter is redundant, it is set to zero. (3) OR is odds ratio, dominance ratio,  $OR = \exp(\beta)$ .

Overall, gender, exercise frequency, preference for leisure sports, and whether or not they have participated in mass sports activities significantly affect the proportion of annual upgraded sports consumption expenditure to total annual sports consumption. However, education, household residence, average monthly expenditure, efficiency of school sports facilities or sports services, preference for traditional athletic, ethnic sports, and outdoor sports have no significant effect on the proportion of annual upgraded sports consumption expenditure to total annual sports consumption. The main regression results are as follows.

In terms of exercise frequency, the partial regression coefficient of college students who exercise less than 2 times per week is -0.749 ( $p < 0.01$ ), and the corresponding OR value is 0.473, which means that compared to the probability of

higher proportion of upgraded sports consumption expenditure in the group of exercising 2 times per week and above, the probability of higher proportion of upgraded sports consumption expenditure in the group who exercise less than 2 times per week is only 47.3% of the former. Those who exercise more frequently usually have higher requirements for the quality and function of sports equipment and have a stronger pursuit of sports achievement, so they are more likely to spend more on upgraded sports consumption such as branded sports equipment, smart sports device, sports-specific training courses and watching online and offline sports competitions.

Regarding the categories of sports, the bias regression coefficient of unselected leisure category is -0.351 ( $p < 0.1$ ), and the OR value is 0.704, indicating that not preferring

leisure items has a more significant inhibitory effect on the proportion of upgraded sports consumption expenditure, while not preferring other types of sports has no statistically significant inhibitory effect on the proportion of upgraded sports consumption expenditure. It can be speculated that it is because the equipment and venues of leisure sports are highly specific and emphasize individualization, such as golf, billiards, squash, roller skating, etc., which are more costly. Meanwhile, the partial regression coefficient of participation in mass sports is 0.469 ( $p < 0.01$ ), which corresponds to an OR of 1.598, indicating that for college students who have participated in mass sports, their probability of spending a greater proportion of their expenditure on upgraded sports consumption is 1.598 times as the college students who have not participated in mass sports activities. It is suggested that good sports awareness has a positive effect on upgrading sports consumption. The status of college students' participation in mass sports activities includes participants and volunteers, and regardless of the status of participation, they all reflect good sports consciousness. Based on QIAO's opinion [19], citizens' sports awareness, is defined as a correct perception of the value of sports, a positive tendency of participating in sports in aspects of behavior, emotion and attitudes. People who have a correct understanding of their social roles, social responsibilities and social rights in improving the physical quality of the whole nation and have a high level of consciousness, initiative and enthusiasm to participate in sports activities are considered as having good sports awareness. In this survey, 21.9% of Guangzhou college students have participated in mass sports events as participants, 5.6% as volunteers, and 8.6% of Guangzhou college students have participated both as participants and volunteers.

The effect of gender on sports consumption behavior was also significant. The regression results show that the partial regression coefficient for male is 0.920 and statistically significant at the 1% level, with a corresponding OR of 2.465, indicating that male college students are more likely to spend more on upgraded sports as the proportion of this is 1.465 times as female college students. The study concludes that this was because male college students generally exercised more frequently per week (chi-squared value of 57.708,  $p < 0.01$ ) and had better sports awareness (chi-squared value of 4.310,  $p < 0.05$ ). In addition, the partial regression coefficient of 0.215 for the family residence in city corresponds to an OR of 1.240. Compared with college students living in rural areas, college students living in urban environments had a greater proportion of upgraded sports consumption in total sports consumption expenditures, but permanent family residence did not have a significant effect on the proportion of upgraded sports consumption in total sports consumption expenditures, which may be due to the fact that the same living environment and similar physical education during college reduced the effect of the native environment.

In terms of the influence of overall consumption expenditure, when the average monthly expenditure takes values from 1 to 4, the partial regression coefficients are -0.641, -0.232, -0.063 and 0.45 respectively, and the

corresponding OR values are 0.527, 0.793, 0.939 and 1.568 respectively, indicating that the more the average monthly expenditure of college students, the greater the proportion of upgraded sports consumption expenditure tends to be. However, the effect is not significant. It can be speculated that it is because the interests of college students are becoming more and more diversified and there are many other consumption areas that take up the monthly expenses of college students; and most college students have not yet achieved economic independence, it is difficult to distinguish whether the expenses come from the monthly living expenses or from the family when they are engaged in upgraded sports consumption.

Finally, the partial regression coefficient of school sports facilities and service efficiency is -0.02 with an OR of 0.980, indicating that school sports facilities and sports services has a slight inhibitory effect on the proportion of college students' upgraded sports consumption expenditure. This may be due to the fact that physical education classes and sports guidance provided by schools show a certain substitution effect on students' demand for finding training services in the society. The games of sports teams organized by the school meet the needs of college students who pay to watch professional athletes' games, but this effect is not significant.

#### 4. Conclusion and Policy Implications

At present, Chinese sports industry is in a period of rapid growth. As important consumers to promote the development of sports industry, college students consume upgraded sports goods and services more and more often. This shows dynamic consistency with the upgrading direction of the sports industry, which mainly consists of sports training, sports tourism, sports events, etc., showing new characteristics of intelligent, integrated and diverse. In terms of influencing factors, gender, sports habits and preferences, and participation in community sports activities all have significant impact on college students' upgraded sports consumption, indicating that the policies aimed at effectively promote the upgraded sports consumption of college students could focus on sports awareness, sports habits and mass sports. Although result of this study shows that the efficiency of school sports facilities does not affect college students' upgraded sports consumption significantly, its mechanism is worthy of further discussion. It should be noted that dissimulation consumption exists among some college students, and it is necessary to help them form rational consumption values through targeted guidance by schools.

Specifically, findings of this study have several policy implications to make. College students is an important group to promote the high-quality development of sports industry, so the first thing we need to do is to expand the consumer of college students. Secondly, under the guidance of relevant government documents such as "National Fitness Program Outline 2016-2020", "Healthy China 2030" Planning Outline" and "Opinions on Promoting National Fitness and Sports Consumption to Promote the High-quality



Development of the Sports Industry", we should encourage the sports awareness of college students, help them specialize in some kinds of sports and make exercise a lifelong habit. Apart from the school side, it is necessary to vigorously develop spectator sports based on professional sports and participatory sports based on community sports. Moreover, we need to meet the growing sport-related needs of college students and promote sports consumption by supply-side reform. Given that college students' sports consumption is characterized as integrated and diverse, we can also actively work to develop integrated sports activities such as sports that blend in tourism, sports training, and sports education, continuously enriching the structure of college students' sports consumption. Finally, the dissimulation of conspicuous consumption deserves attention. It is required that we make good use of the advantages of ideological and political education in colleges and universities. Courses, organization and cultural could help college students form good sports consumption values, paving the way for achieving healthy interaction between the growth of sports industry and the all-round development of college students.

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