A Study on the Motivation and Behavior of College Students in Campus Sports Activities

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Abstract: This study aims to explore the motivational structure for college students' participation in campus sports activities and its influence on participation behavior, analyzing differences among demographic groups. Using a mixed-methods approach, we developed a theoretical model of sports participation motivation and behavior through literature analysis and theoretical deduction, based on the Theory of Planned Behavior and Self-Determination Theory. A structured questionnaire was designed, incorporating demographic information, sports participation motivation (intrinsic, extrinsic, social), and participation behavior (frequency, intensity, duration, types of activities). The study involved 2,862 undergraduate students from 12 universities of varying tiers nationwide, with factor analysis, correlation analysis, and structural equation modeling conducted using SPSS 26.0 and AMOS 24.0. The findings reveal that college students' sports participation motivation consists of five dimensions: health promotion, skill enhancement, social interaction, stress relief, and external drive. Notably, intrinsic motivation has a direct positive impact on participation behavior, while extrinsic motivation indirectly influences participation through self-efficacy. Significant differences were found based on gender and academic year; males scored higher in skill enhancement and exercise intensity, while upperclassmen exhibited lower social motivation compared to freshmen. The conclusions provide a theoretical basis for reforming physical education in colleges, recommending strategies to enhance student participation levels through optimizing curriculum design, fostering a sports culture, and reinforcing individual goal identification.

Keywords: College Students; Campus Sports Activities; Participation Motivation; Participation Behavior; Influencing Factors

1. Introduction

1.1 Background and Research Questions

Under the "Healthy China 2030" initiative, college sports education is increasingly recognized as a key factor in enhancing national physical fitness. The Ministry of Education's guidelines emphasize that colleges should cultivate lifelong sports awareness through physical activities. However, data indicate declining physical fitness among college students, with insufficient participation in campus sports activities being a significant issue. Observations reveal marked individual differences in the use of athletic facilities outside teaching hours, with some students exhibiting strong motivation to engage in exercise while others remain marginalized from sports activities. Understanding the motivational mechanisms behind this behavioral differentiation and the pathways through which motivation translates into behavior is a pressing concern in physical education.

Campus sports not only serve as a platform for physical exercise but also as vital contexts for social interaction and character development. As the sense of agency among "Generation Z" students grows, their motivations for participating in sports have become more diverse, encompassing not only basic health needs but also social interaction and self-fulfillment. Nonetheless, prevalent issues in college sports, such as a mismatch between course offerings and student needs, and inadequacies in campus sports culture, hinder some students' sustained participation. Therefore, systematically analyzing the motivational structure of college sports participation and its behavioral impacts is urgently needed.

1.2 Literature Review

Research on sports participation motivation began in the 1960s, primarily exploring psychological theories, such as McClelland’s

achievement motivation theory. In the 21st century, the paradigm has shifted towards interdisciplinary approaches, incorporating sociological perspectives like social capital theory and ecological models, focusing on how family, peers, and school environments influence college students' sports participation. Ryan and Deci's Self-Determination Theory has significantly impacted the classification of motivation into intrinsic, extrinsic, and amotivation, providing a theoretical framework for subsequent studies. Empirical research indicates that intrinsic motivation significantly predicts sports participation behavior more effectively than extrinsic motivation, with social support factors indirectly influencing behavior through motivation.

Domestic research began in the 1990s, primarily descriptive studies on the status and problems of college students' participation in sports. Since the 21st century, theoretical application research has deepened, introducing theories such as the Theory of Planned Behavior and Social Cognitive Theory into motivation-behavior research. Scholars have identified key motivational dimensions for college students in China, including health needs, interests, social needs, and achievement orientation, noting differences in motivational structures based on major and gender. However, existing studies have limitations: (1) a lack of unified standards for motivation dimensions, with some studies overlooking the role of socio-cultural factors; (2) mechanistic studies on motivation-behavior relationships often remain at the univariate analysis level, lacking systematic examination of multiple mediation effects; (3) insufficient specific research on the "Generation Z" cohort, failing to comprehensively reflect the characteristics of sports participation among contemporary college students.

1.3 Research Objectives and Significance

This study aims to construct a localized model of college students' sports participation motivation, revealing the direct influence of motivational structure on participation behavior and examining the moderating effects of demographic variables in the motivation-behavior relationship. Specific objectives include: (1) empirically identifying core motivational dimensions for college students' sports participation; (2) verifying the differentiated impact pathways of intrinsic and extrinsic motivation on participation behavior; (3) identifying significant differences in motivational structures and behaviors across genders and academic years; (4) developing a multi-level influence model that encompasses individual psychology, social environment, and institutional supply.

Theoretically, this study integrates the Theory of Planned Behavior and Self-Determination Theory, incorporating the social ecological model into the motivation analysis framework, thereby broadening the theoretical perspective on sports participation behavior and providing empirical evidence for constructing localized theoretical models. Practically, the findings can offer scientific guidance for reforming college sports curricula and building campus sports culture, facilitating a synergistic education mechanism of "motivation stimulation-behavior guidance-environment support," which is crucial for enhancing college students' physical health and promoting holistic development.

2. Theoretical Framework and Research Hypotheses

2.1 Core Concept Definitions

2.1.1 Campus Sports Activities

This study defines campus sports activities as physical exercise, competitions, and related cultural practices conducted within the campus for all students, including required and elective physical education courses, university-level sporting events, student sports club activities, and self-directed exercise. The core characteristics include the campus-based organizational nature, student participants, and educational objectives, distinguishing these from commercially organized sports activities by social sports organizations.

2.1.2 Participation Motivation

Referring to the intrinsic psychological drives that prompt individuals to engage in campus sports activities, participation motivation is viewed as the subjective recognition of anticipated benefits derived from specific sports activities. This study employs Self-Determination Theory’s motivation classification framework, distinguishing participation motivation into intrinsic motivation (spontaneous needs based on interest and enjoyment), extrinsic motivation (driven by external rewards or pressures), and social motivation (motivation based on social

interaction and group identity), further detailing specific dimensions for measurement.

2.1.3 Participation Behavior

This refers to the actual participation performance of individuals in campus sports activities, quantitatively assessed through four dimensions: frequency of participation, exercise intensity, duration, and types of activities. Frequency is measured by the number of weekly participations, intensity is indicated by the proportion of moderate-intensity or higher exercise, duration records the length of each activity, and types differentiate competitive, fitness, and recreational activities.

2.2 Theoretical Foundations

2.2.1 Theory of Planned Behavior (TPB)

Proposed by Ajzen, the Theory of Planned Behavior posits that individual behavior is determined by behavioral intentions, which are influenced by attitudes, subjective norms, and perceived behavioral control. This study applies this theory to analyze the motivation-behavior relationship, hypothesizing that college students' positive attitudes towards sports activities (intrinsic motivation), support from significant others (social motivation), and confidence in their athletic abilities (self-efficacy) together influence their intention to participate, subsequently translating into actual participation behavior.

2.2.2 Self-Determination Theory (SDT)

Ryan and Deci's Self-Determination Theory emphasizes three basic psychological needs: autonomy, competence, and relatedness. Intrinsic motivation arises from interest in the activity itself, while extrinsic motivation relates to external incentives. This study utilizes this theory to analyze motivational structures, suggesting that intrinsic motivation fulfilling autonomy needs (e.g., interest-driven) has a stronger predictive power for sustained participation compared to extrinsic motivation based on external rewards (e.g., sports performance), which may diminish over time.

2.2.3 Social Ecological Model (SEM)

This model analyzes health behavior influences across five levels: individual, interpersonal, organizational, community, and policy. In the context of campus sports, individual motivational characteristics, peer influences at the interpersonal level, and school sports policies at the organizational level collectively constitute the ecological system of participation behavior. This study focuses on the interaction between individual psychological motivation (individual level) and the campus sports environment (organizational level) on behavior.

2.3 Research Hypotheses Construction

Based on theoretical analysis and literature review, the following research hypotheses are proposed:

Hypothesis H1: College students' sports participation motivation has a multi-dimensional structure, which can be divided into core dimensions of health promotion, skill enhancement, social interaction, stress relief, and external drive.

Hypothesis H2: Intrinsic motivation (health promotion, skill enhancement, stress relief) has a direct positive impact on participation behavior (frequency, intensity, duration), with a greater effect than extrinsic motivation (external drive).

Hypothesis H3: Social motivation (social interaction) indirectly affects participation behavior through interpersonal support mechanisms, meaning students with stronger social motivation are more likely to increase sports participation through peer interactions.

Hypothesis H4: Gender differences significantly affect motivational structures and participation behaviors, with males scoring higher in skill enhancement motivation and exercise intensity, while females excel in social interaction motivation and participation frequency.

Hypothesis H5: Academic year differences lead to variations in motivation intensity, with freshmen exhibiting significantly higher external drive motivation (e.g., course requirements) compared to upperclassmen, while upperclassmen's intrinsic motivation (e.g., interest-driven) exhibits developmental characteristics influenced by academic pressure.

3. Research Design

3.1 Research Subjects and Sample Selection

A stratified cluster sampling method was employed, selecting full-time undergraduates from 12 universities across China (including 4 "Double First Class" universities, 6 regular undergraduate institutions, and 2 vocational colleges). To ensure regional representation, the sample covered universities in the eastern (5), central (3), western (2), and northeastern (2) regions. Data collection occurred from March to May 2024, with 3,000 questionnaires distributed

and 2,862 valid responses collected, resulting in a validity rate of 95.4%. The sample structure indicates a gender distribution of 1,528 males (53.4%) and 1,334 females (46.6%), a grade distribution of 721 freshmen (25.2%), 812 sophomores (28.4%), 685 juniors (23.9%), and 644 seniors (22.5%), and a major composition of 1,489 in science and engineering (52.0%) and 1,373 in humanities (48.0%).

3.2 Research Methods

3.2.1 Questionnaire Survey

The "Campus Sports Participation Questionnaire" was independently developed, featuring three core modules: (1) Demographic Information: gender, grade, major, place of origin, and sports specialties; (2) Participation Motivation: measured using a 7-point Likert scale, with an initial item set of 25 refined into formal items through theoretical deduction and pre-surveys; (3) Participation Behavior: assessed using 4 items to measure frequency, intensity, duration, and type of activities, with intensity assessed against the American College of Sports Medicine's guidelines for moderate intensity as defined by breathlessness and increased heart rate.

3.2.2 Statistical Analysis

Data were analyzed using SPSS 26.0 for descriptive statistics, factor analysis, independent samples t-tests, and ANOVA. Exploratory factor analysis employed principal component analysis to extract common factors, supported by Varimax rotation. Confirmatory factor analysis and structural equation modeling were conducted using AMOS 24.0, with fit indices including χ^2/df, GFI, AGFI, NFI, CFI, and RMSEA, where χ^2/df values between 1-3, RMSEA<0.08, and CFI>0.9 indicate good model fit.

3.2.3 Structural Equation Modeling (SEM)

A structural equation model incorporating motivation dimensions, self-efficacy, and participation behavior was constructed to examine the direct effects of motivation on behavior and the indirect effects through self-efficacy. The self-efficacy scale used was the General Self-Efficacy Scale (GSES), with the Chinese revised version containing 10 items, widely validated for reliability and validity.

3.3 Measurement Tool Development and Reliability/Validity Testing

3.3.1 Reliability Testing

The motivation scale demonstrated good internal consistency, with a total Cronbach's α coefficient of 0.892 and individual dimension coefficients ranging between 0.784-0.867. The participation behavior scale had an α coefficient of 0.823, and the self-efficacy scale had an α coefficient of 0.856, all meeting psychometric standards.

3.3.2 Validity Testing

Exploratory factor analysis revealed 5 common factors from the 25 motivation items after rotation, explaining 63.7% of the variance, with all items loading above 0.5 on their respective factors and no cross-loadings, confirming good structural validity. Confirmatory factor analysis showed that the five-factor model fit indices were χ^2/df=2.13, GFI=0.91, AGFI=0.88, NFI=0.92, CFI=0.95, RMSEA=0.062, all meeting fit standards and further supporting the motivation structure's validity.

4. Data Results and Analysis

4.1 Descriptive Statistics of the Sample

4.1.1 Demographic Characteristics

Among the sample, males accounted for 53.4% and females 46.6%, closely reflecting the actual student structure in universities; grade distribution was balanced, with freshmen, sophomores, juniors, and seniors comprising 25.2%, 28.4%, 23.9%, and 22.5%, respectively. The major distribution indicated slightly more students in science and engineering (52.0%) compared to humanities (48.0%). Geographically, 1,897 students (66.3%) identified as urban and 965 (33.7%) as rural. Additionally, 62.8% of students reported having sports specialties, primarily in basketball, badminton, and running.

4.1.2 Comparison of Motivation and Behavior Means

The mean scores for motivation dimensions were: health promotion (5.82±1.23)>social interaction (5.65±1.31)>stress relief (5.48±1.42)>skill enhancement (5.36±1.54)>external drive (4.89±1.67), indicating health needs as the primary motivation for sports participation among university students, while external drives (like academic performance and attendance) were relatively less significant. Participation behavior averaged 3.26 times per week, lasting 52.3 minutes per session, with moderate-to-high intensity sports participation comprising 68.4%, predominantly in fitness (45.2%) and leisure

activities (38.7%), while competitive sports had a participation rate of only 16.1%.

4.2 Exploratory Factor Analysis

A principal component analysis of the 25 motivation items yielded a KMO value of 0.873 and significant Bartlett's test ($p<0.001$), suitable for factor analysis. After Varimax rotation, 5 common factors were extracted, with factor loadings indicating:

Factor 1 (6 items): Reflecting health and fitness needs, labeled "Health Promotion Motivation" (loadings 0.62-0.78);

Factor 2 (5 items): Focused on skill learning and competitive performance, labeled "Skill Enhancement Motivation" (loadings 0.59-0.75);

Factor 3 (5 items): Involving peer interaction, teamwork, and emotional exchange, labeled "Social Interaction Motivation" (loadings 0.61-0.79);

Factor 4 (4 items): Related to relieving academic pressure and regulating emotional states, labeled "Stress Relief Motivation" (loadings 0.58-0.76);

Factor 5 (5 items): Incorporating external factors like grades and attendance requirements, labeled "External Drive Motivation" (loadings 0.55-0.73).

4.3 Confirmatory Factor Analysis

AMOS was used to validate the five-factor model, showing that all observed variables had standardized loadings exceeding 0.5 and were significant ($p<0.001$), indicating strong convergent validity for the measurement model. The model fit indices were excellent ($\chi^2/df=2.13$, GFI=0.91, AGFI=0.88, NFI=0.92, CFI=0.95, RMSEA=0.062), with discriminant validity confirmed as each factor's average variance extracted (AVE) exceeded 0.5 and the inter-factor correlations were less than the square root of the AVE, demonstrating clear factor structure.

4.4 Structural Equation Model Testing

The model examining the impact of motivation dimensions on participation behavior was constructed as depicted in the results (path coefficients omitted). Health promotion ($\beta=0.32$, $p<0.001$), skill enhancement ($\beta=0.25$, $p<0.01$), social interaction ($\beta=0.28$, $p<0.001$), and stress relief ($\beta=0.29$, $p<0.001$) had direct positive effects on participation behavior, with health promotion showing the strongest effect. The direct effect of external drive was not significant ($\beta=0.12$, $p>0.05$), but its indirect effect through self-efficacy was significant ($\beta=0.18$, $p<0.01$), indicating that external drivers must enhance individuals' confidence in sports to translate into actual behavior. The mediating effect of self-efficacy constituted 37.5% of the total effect, validating the partial mediation model's reasonableness.

4.5 Group Comparison Analysis

4.5.1 Gender Difference Testing

Independent samples t-tests indicated that males scored significantly higher on skill enhancement motivation (5.62 vs. 5.08, $t=8.92$, $p<0.001$) and exercise intensity (72.3% vs. 64.5%, $t=6.87$, $p<0.001$), while females had higher scores on social interaction motivation (5.89 vs. 5.41, $t=-7.63$, $p<0.001$) and participation frequency (3.45 times/week vs. 3.08 times/week, $t=-5.21$, $p<0.01$). There were no significant gender differences in stress relief or health promotion motivation ($p>0.05$).

4.5.2 Grade Difference Testing

One-way ANOVA showed a significant decline in external drive motivation with increasing grade (freshmen 5.21 vs. sophomores 4.98 vs. juniors 4.76 vs. seniors 4.52, $F=12.36$, $p<0.001$), with the most significant difference between freshmen and seniors ($p<0.01$). Among intrinsic motivation dimensions, skill enhancement peaked in sophomores (5.52) but fell to 5.18 in seniors ($F=8.94$, $p<0.01$). Stress relief motivation displayed a "U-shaped" distribution, with freshmen (5.32) and seniors (5.56) significantly higher than sophomores and juniors ($p<0.05$), possibly reflecting adjustment periods and graduation pressures. In terms of participation behavior, sophomores exhibited the highest average intensity (71.2%), while seniors had the longest duration (62.5 minutes/session), indicating differences in time allocation across academic stages.

5. Discussion

5.1 Multidimensional Structure of Motivations for Sports Participation Among University Students

This study empirically identified a five-dimensional motivation structure: health promotion, skill enhancement, social interaction, stress relief, and external drive. This aligns with classic theories distinguishing intrinsic (health, skills, stress relief) and extrinsic (external drive) motivations, while emphasizing social

interaction as a unique characteristic of Chinese university students. The high mean for social interaction motivation (5.65) suggests that contemporary students view sports as a vital social medium, resonating with the "Generation Z" dual demand for virtual and real-life interactions. Notably, the low mean for external drive motivation (4.89) indicates limited effectiveness of external constraints, such as academic assessments, in motivating participation, suggesting that universities should focus on stimulating intrinsic motivations to enhance sustained engagement.

5.2 Mechanisms of Motivation's Impact on Participation Behavior

The structural equation model revealed differentiated pathways of motivation effects: intrinsic motivations had significant direct effects, validating self-determination theory's assertion that satisfying autonomy needs drives behavior, indicating that participation driven by interest and intrinsic needs is more likely to convert into actual actions. Conversely, external drive motivation influenced behavior only through self-efficacy, suggesting that effective participation is contingent on aligning external demands with individuals' perceived capabilities. This highlights the need for sports management in universities to emphasize building students' confidence through tailored instruction and supportive environments rather than solely enforcing attendance.

The direct effect of social interaction motivation (β=0.28) underscores the significance of interpersonal environments in the socio-ecological model, where peer group participation and social appeal are critical factors. Universities could cultivate a positive sports social atmosphere by fostering sports clubs and organizing team events to leverage group norms for enhancing participation.

5.3 Explanations for Differences in Participation Motivations and Behaviors Among Groups

Gender differences revealed that males tend to focus on skill enhancement and self-challenge through sports, aligning with traditional societal constructs of "strength" and "competition," while females prioritize sports' social functions, utilizing activities as avenues for expanding social networks and emotional exchanges. This suggests that universities should accommodate gender-specific needs in physical education curricula by offering more recreational and cooperative activities (e.g., yoga, dance, volleyball) for female students and competitive training and events for males.

Grade differences reflect developmental characteristics across university stages: freshmen are heavily influenced by external drives such as curriculum requirements, while intrinsic motivations become more prominent in higher grades as external constraints diminish. Increased stress relief motivation in seniors may relate to heightened emotional regulation needs under job-seeking or further education pressures. This necessitates a comprehensive sports education framework throughout university, emphasizing rule-based guidance and interest cultivation in the early years and fostering self-directed exercise habits in upper years.

5.4 Dialogue and Enhancement with Domestic and International Literature

The study's conclusion regarding the predominant role of intrinsic motivation aligns with U.S. researchers like Sallis, suggesting that autonomously chosen sports activities are more likely to lead to sustained behavior. However, contrary to Western studies where social motivations are secondary, this research highlights the importance of social interaction motivation, possibly reflecting the emphasis on group belonging within China's collectivist culture. Additionally, separating "stress relief" from traditional health motivation reflects the common reality of academic pressures faced by university students, enriching the contextual understanding of motivation structures.

In contrast to domestic studies indicating a significant impact of external motivation on behavior, this research found no significant direct effect of external drives, potentially due to sample selection differences (with more higher-grade students experiencing reduced external constraints) and optimized measurement tools (differentiating various sources of external drive). The elucidated mediating role of self-efficacy offers a new perspective to explain barriers to motivation transformation, suggesting that even with external pressures, a lack of confidence in one's athletic abilities hinders sustained participation.

6. Conclusion

This study, through empirical analysis of 2,862

university students, elucidates the motivation structure and behavioral mechanisms of campus sports participation:

The motivations for sports participation among university students comprise five dimensions: health promotion, skill enhancement, social interaction, stress relief, and external drive, with intrinsic motivations (the first four dimensions) as the primary behavioral drivers, while external drive influences behavior indirectly through self-efficacy.

Significant differences in participation behavior exist by gender and grade: males prioritize skill enhancement and high-intensity activities, while females rely on social motivation to maintain participation frequency; lower grade students are more influenced by external drives, whereas upper-grade students highlight intrinsic motivations, particularly stress relief needs.

The pronounced role of social interaction motivation indicates that the social attributes of sports activities are significant for "Generation Z" university students, with peer influence and group identification as key factors for sustaining participation.

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