

# Forging Collective Identity and Striving Spirit through Basketball Culture: An Ideological and Political Education Perspective in Dongguan Universities

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**Abstract:** This study investigates the role of basketball culture (BC) in shaping university students' collective identity (CI) and striving spirit (SS) from the perspective of ideological and political education (IPE) in universities in Dongguan, China. Grounded in social identity theory and the educational principle of "cultivating virtue", the research constructs a structural equation model (SEM) to examine the relationships among BC, IPE, CI, and SS. Using a stratified random sample of 305 university students, data were collected through a structured questionnaire and analyzed via SPSS and AMOS. The results reveal that BC has significant positive effects on IPE, CI, and SS, while IPE exerts a stronger direct influence on both CI and SS. Moreover, IPE plays a substantial mediating role, accounting for over 60% of the total effect of BC on students' value development. These findings suggest that while BC provides an important experiential platform for value cultivation, its educational impact is significantly enhanced through systematic ideological and political guidance. The study contributes to the theoretical understanding of sports-based value education by clarifying the mechanism through which BC influences student development. Practically, it offers insights for universities to integrate sports culture with IPE by constructing a coordinated "culture–education–development" framework.

**Keywords:** Basketball culture (BC); Ideological and political education (IPE); Collective identity (CI); Striving spirit (SS); Structural equation modeling (SEM)

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## 1. Introduction

In the new era, ideological and political education (IPE) in Chinese universities is guided by the fundamental principle of "establishing virtue and cultivating people", emphasizing holistic student development. Physical education (PE), as a key component of the "five-education integration" framework, plays an essential role in shaping students' moral character and personal values. The Chinese sports spirit, characterized by perseverance, teamwork, and dedication, aligns closely with the goals of IPE, making the integration of sports culture into education an important pathway. Among various sports, basketball occupies a central position in campus culture due to its accessibility, strong collective nature, and widespread popularity.

Dongguan, recognized as a “National Basketball City,” provides a unique cultural context with its well-established basketball ecosystem. However, basketball culture (BC) in local universities often emphasizes activities over deeper educational connotations, limiting its ideological and political potential. At the same time, university students increasingly face challenges such as weakened collective identity (CI) and insufficient resilience. Thus, to address these issues, this study examines the role of BC in influencing students’ CI and striving spirit (SS), and explores the mediating effect of IPE. By constructing a “BC–IPE–CI/SS” model, this research aims to enrich theoretical understanding and provide practical insights for integrating sports culture with IPE.

## 2. Literature review

### 2.1. Sports culture and university IPE

The academic community has formed a consensus on “practice-oriented value internalization” regarding the educational function and value leading role of sports culture. Yang Li (2023) proposed the “practice—cognition—repractice” educational closed loop, taking basketball and other collective sports as the core carrier, transforming abstract value concepts such as collectivism, awareness of rules, and striving spirit into perceptible physical experiences for students through concrete practical scenarios, then forming rational cognition through reflection and summary after practice, and finally achieving the migration of value cognition to multiple scenarios, completing the deep internalization of values <sup>[1]</sup>. This educational model has both the permeable educational advantage and a clear value orientation, effectively making up for the shortcomings of traditional IPE of “emphasizing theory but neglecting practice”, becoming an important supplement for universities to implement the goal of “establishing virtue and cultivating people” <sup>[2]</sup>. Research on integrating sports activities into IPE presents a dual-line advancement pattern of “theoretical deepening+practical landing”. Based on Yang Li’s educational model (practice—cognition—repractice), scholars have expanded the integration path and refined a framework of “practical experience—emotional resonance—cognitive sublimation—behavioral transformation”, emphasizing the mediating role of emotional resonance and enriching the micro-logic of integration theory <sup>[3]</sup>. Various universities have actively explored and accumulated rich experience. For example, Xia et al. (2020), taking Central China Normal University as a case, constructed a trinity sports curriculum ideological and political system of “curriculum—activities—atmosphere”, empirically proving the effectiveness of this model, which improved the quality of education by more than 30% <sup>[4]</sup>.

### 2.2. University Basketball Culture (BC)

The academic community has formed a multi-dimensional understanding of the connotation, constituent elements, and educational functions of BC. Ji Delin (2022) defined it as a composite cultural system integrating material, institutional, spiritual, and behavioral dimensions, with core collaborative and persevering qualities highly compatible with the value orientation of IPE <sup>[5]</sup>. Yu Guojiang (2023) decomposed it into four interactive dimensions of material, institutional, spiritual, and behavioral, constituting a complete educational ecosystem <sup>[6]</sup>. Both emphasize BC’s practical educational advantages, which can cultivate teamwork, awareness of rules, and other qualities while improving students’ physical fitness, providing a functional basis for it to become a carrier of ideological and political education. Research shows that although BC in Dongguan universities has a good foundation at the material and behavioral levels <sup>[7]</sup>, the integration of the spiritual level with ideological and political elements still has room for improvement. Meanwhile, the relevant empirical research provides an important reference for the regional construction of university BC. For instance, about construction experience, successful cases mostly focus on systematization and characterization, including constructing the trinity model of “curriculum teaching—association activities—brand competitions”, strengthening collaborative education through resource integration and participation of ideological and political teachers, and creating a strong basketball cultural atmosphere through diverse forms <sup>[8,9]</sup>.

### 2.3. Collective Identity (CI) and Striving Spirit (SS)

The theoretical basis of CI is the social identity theory proposed by Henri Tajfel <sup>[10]</sup>. This theory holds that individuals obtain self-identity through belonging to specific groups and develop emotional dependence and behavioral support for the group <sup>[11]</sup>. In terms of measurement, current research mostly adopts a three-dimensional framework of “group belonging—collective honor—behavioral participation” to quantify the degree of identity. Dai Meiling (2024) pointed out that sports activities can quickly strengthen students’ CI through the process of “common goal setting—collaborative effort—result sharing”, and the effect is better than classroom preaching, providing theoretical support for the correlation research between BC and CI <sup>[12]</sup>. As for connotation deconstruction, the academic community believes that SS is the concrete expression of the spirit, and the SS of youth in the new era emphasizes “being able to endure hardship, daring to break through, and being good at persisting”, which is highly compatible with youth value standards <sup>[13,14]</sup>. Concerning the cultivation path, present research has formed a three-dimensional framework of “theoretical guidance—practical tempering—value transformation” <sup>[15–17]</sup>, among which basketball-related scenarios can effectively temper SS, and the integration of Chinese sports spirit can significantly improve the behavioral transformation indicators of youth SS.

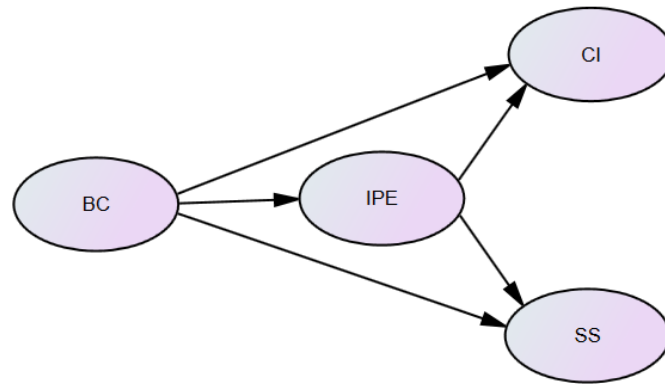
### 2.4. Research gap

Through a systematic literature review, this study identifies the following research gaps. First, present research mostly stays at the theoretical discussion or single-case level, lacking large-sample empirical research based on regional characteristics. Second, the mechanism research on how BC influences university students’ values is not deep enough, especially lacking quantitative analysis of influence paths. Third, the mediating role of IPE in the influence of BC on value shaping has not been clarified. Fourth, synergistic mechanism research is weak. Existing research has not fully explored the coordinated shaping mechanism of BC on CI and SS, lacking in-depth analysis of whether there is mutual promotion and joint elevation between the two, making it difficult to provide universities with practical and systematic “one-stop” value cultivation solutions.

## 3. Theoretical model and hypothesis

### 3.1. Theoretical model

This study mainly draws on several established theories as the core theoretical foundation, integrating IPE, PE, and cultural identity perspectives to construct the research model. First, the “Establishing Virtue and Cultivating People” theory of IPE emphasizes that the fundamental task of higher education is to cultivate students morally, intellectually, physically, aesthetically, and laboriously, guided by socialist core values <sup>[18]</sup>. BC, as a practical carrier of education, aligns closely with these goals by promoting CI and SS, enabling IPE to shape student values through guided participation in basketball activities. Second, PE and cultural identity theory also provide the core logic for linking BC to internalized student traits. PE emphasizes cultivating both physical and moral character through sports practice <sup>[19]</sup>, while cultural identity theory asserts that individuals internalize values and emotional belonging through participation in cultural activities <sup>[20]</sup>. Third, social identity theory suggests that individuals’ self-identity partially derives from group membership <sup>[21]</sup>. Participation in basketball courses, teams, and competitions enhances students’ social identification with the “basketball participant” group. Through teamwork and collective achievement, this identification extends to broader collectives such as classes, colleges, and universities, fostering a stronger collective identity. That is to say, in campus basketball settings, students’ exposure to BC transforms CI and SS into internalized behaviors, which IPE further reinforces. Based on these theoretical foundations, the study constructs an integrated SEM model, in which BC serves as the exogenous independent variable, IPE acts as the mediating variable, and CI and SS serve as the endogenous dependent variables (**Figure 1**).



**Figure 1.** Theoretical model of the study.

### 3.2. Research hypotheses

Based on the above theoretical framework, the following hypotheses are proposed:

- H1: BC has a significant positive impact on IPE.
- H2: BC has a significant positive impact on CI.
- H3: BC has a significant positive impact on SS.
- H4: IPE has a significant positive impact on CI.
- H5: IPE has a significant positive impact on SS.
- H6: IPE mediates the relationship between BC and CI.
- H7: IPE mediates the relationship between BC and SS.

## 4. Methodology

### 4.1. Research design

This study adopts a quantitative research design with a cross-sectional survey approach to examine the relationships among BC, IPE, and university students' value shaping (CI and SS). The core research variables include: BC, IPE, CI and SS. A structured questionnaire was developed based on existing validated scales and adapted to the regional characteristics of Dongguan as a "National Basketball City" as well as the specific context of university BC construction. All items employ a Likert 5-point scale (1 = strongly disagree to 5 = strongly agree), ensuring data quantifiability and comparability. The study constructs a theoretical mediation model (see Figure 1) in which IPE serves as a mediating variable between BC and student value shaping outcomes (CI and SS). Structural equation modeling (SEM) is used as the primary analytical strategy to test both direct and indirect effects.

### 4.2. Participants

The target population of this study is university students in Dongguan, China. To ensure sample representativeness, four universities in Dongguan were selected using a stratified random sampling strategy. These institutions cover three major types of higher education institutions in China. The stratification dimensions included university type, grade level, and major type (English/foreign languages, liberal arts, and science/engineering), while also balancing gender ratios. A total of 350 questionnaires were distributed, and 305 valid questionnaires were recovered, yielding an effective response rate of 87.14%. The sample size (N = 305) meets the recommended requirement for SEM (**Table 1**), supporting subsequent statistical analyses.

**Table 1.** Demographic characteristics of participants (N = 305)

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	150	49.18
	Female	155	50.82
Grade	Freshman	74	24.26
	Sophomore	94	30.82
	Junior	89	29.18
	Senior	48	15.74
Major Type	English/Foreign Language	113	37.05
	Non-English (Liberal Arts)	91	29.84
	Non-English (Science & Engineering)	101	33.11
Frequency of Participation in Campus Basketball Activities	Never	42	13.77
	Occasionally	102	33.44
	Sometimes	73	23.93
	Often	51	16.72
	Very Frequently	37	12.13
	Basketball courses	146	47.87
Forms of Participation in Basketball Activities	Volunteer service (e.g., sports events)	48	15.74
	Watching campus basketball games	119	39.02
	Class/college competitions	71	23.28
	Basketball clubs or school team	52	17.05
	Playing with friends	133	43.61
	Only follow, not participate	60	19.67
Perception of Dongguan Basketball Culture Atmosphere	Other	2	0.66
	Strongly agree	142	46.56
	Agree	120	39.34
	Neutral	40	13.11
	Disagree	2	0.66
	Strongly disagree	1	0.33

As **Table 1** shows, the sample is well balanced in terms of gender, with 49.18% male and 50.82% female respondents. Regarding academic grade, sophomores constitute the largest proportion (30.82%), followed by juniors (29.18%), freshmen (24.26%), and seniors (15.74%), indicating a relatively even distribution across grade levels. With respect to major type, students from English or foreign language disciplines account for 37.05%, while those from non-English majors are divided between liberal arts (29.84%) and science and engineering (33.11%), suggesting disciplinary diversity in the sample. In terms of engagement with campus basketball activities, most participants report some level of involvement, with “occasionally” (33.44%) and “sometimes” (23.93%) being the most common responses, while only 13.77% report no participation. Multiple forms of participation are observed, including taking basketball courses (47.87%), playing with friends (43.61%), and watching campus games (39.02%), indicating both formal and informal engagement. Finally, a large majority of respondents perceive Dongguan as having a strong basketball cultural atmosphere, with 85.90% expressing agreement or strong agreement, reflecting a generally positive cultural perception.

### 4.3. Data collection

Data collection was conducted from December 2025 to January 2026, a period corresponding to the regular teaching

stage of universities when students' participation in campus basketball activities maintains continuity, thereby enhancing data authenticity. A combined online and offline approach was used for questionnaire distribution and recovery. Online distribution was carried out through the WeChat Wenjuanxing platform, where questionnaire links were sent to university student communities, class groups, and basketball association groups of the four selected universities. Offline distribution involved paper questionnaires administered at fixed locations on each campus, including basketball courts, teaching buildings, libraries, and canteens, with on-site guidance provided for completion and collection. After data collection, all recovered questionnaires were rigorously screened. Invalid responses were eliminated based on the following criteria: incomplete answers, regular or patterned answer distribution, and answering time of less than 60 seconds. This process resulted in 305 valid questionnaires.

#### 4.4. Data analysis

Data analysis was performed using SPSS 25.0 and AMOS 24.0 statistical software. The analytical procedures included three main components. First, descriptive statistical analysis was conducted to examine sample demographic characteristics (gender, grade, major type), basketball activity participation patterns, and mean scores for each scale item, providing an overview of the basic distribution of the sample and students' overall perceptions of each research variable. Second, reliability and validity testing were performed. Internal consistency reliability was assessed using Cronbach's  $\alpha$  coefficient. Construct validity was evaluated through confirmatory factor analysis (CFA). Third, SEM analysis was conducted using AMOS 24.0. Model fit was assessed using multiple fit indices (e.g.,  $\chi^2/df$ , CFI, TLI, RMSEA, SRMR). Direct effect hypotheses were tested based on path coefficients, t-values, and p-values. Finally, the Bootstrap method with 5,000 resamples was employed to test the mediating effect of IPE value guidance perception. A mediating effect is considered significant if the 95% confidence interval does not contain zero, and the proportion of the mediating effect relative to the total effect is calculated.

## 5. Results

### 5.1. Reliability and validity test results

This section conducts reliability analysis on the measurement items of four variables: BC, IPE, CI, and SS. The results show that the Cronbach's Alpha coefficients of each variable are all above 0.908 (range 0.908–0.948), and the overall scale Cronbach's Alpha coefficient reaches 0.975 (**Table 2**), indicating that all measurement dimensions have excellent internal consistency reliability, and the scale structure is stable and reliable.

**Table 2.** Reliability coefficient analysis for each dimension and the total scale

Dimension	Number of Items	Sample Size	Cronbach's $\alpha$ Coefficient
BC	4	305	0.917
IPE	4	305	0.948
CI	4	305	0.908
SS	4	305	0.942
Total Scale	16	305	0.975

Meanwhile, CFA was performed using AMOS version 24 to test the construct validity of the scale. The validity analysis was conducted via convergent and discriminant validity indicators. Convergent validity was assessed by means of Average Variance Extracted (AVE) and Composite Reliability (CR) (**Table 3**).

**Table 3.** Convergent and discrimination validity test results for each variable

Construct	AVE	CR	$\sqrt{\text{AVE}}$	BC	IPE	CI	SS
BC	0.590	0.850	0.768	0.768			
IPE	0.610	0.870	0.781	0.520	0.781		
CI	0.570	0.840	0.755	0.480	0.550	0.755	
SS	0.630	0.880	0.794	0.500	0.570	0.600	0.794

From **Table 3**, it is seen that the AVE values for the four constructs, BC, IPE, CI, and SS, ranged from 0.570 to 0.630, all exceeding the recommended threshold of 0.50. Similarly, the CR values ranged from 0.840 to 0.880, surpassing the 0.70 benchmark, which indicates satisfactory internal consistency and reliability of the constructs. Simultaneously, discriminant validity was evaluated by comparing the square root of AVE for each construct with its correlations with other constructs. The square root of AVE values ranged from 0.755 to 0.794, and in each case, the value was higher than the corresponding correlations with the other latent variables, which ranged from 0.480 to 0.600. For example, BC had a square root of AVE of 0.768, which is greater than its highest correlation with another construct (0.520 with IPE). This pattern holds for all constructs, demonstrating that each construct is distinct from the others and that the items effectively measure their intended latent variable. Overall, Table 3 confirms that the questionnaire exhibits strong convergent validity, as all constructs show high AVE and CR values, and good discriminant validity, as the square root of AVE for each construct exceeds its inter-construct correlations. These results provide strong support for the measurement model and indicate that the instrument reliably captures the four dimensions of interest: BC, IPE, CI, and SS.

## 5.2. SEM results

### 5.2.1. Model fit indices

This study used AMOS 24.0 software to construct an SEM to test the influence path of “BC—IPE—CI/SS”. The SEM model fit results for the CFA model were evaluated using several commonly reported indices, as shown in Table 4. The chi-square to degrees of freedom ratio ( $\chi^2/\text{df}$ ) was 1.870, which is below the recommended threshold of 3, indicating an excellent model fit. The Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were 0.968 and 0.957, respectively, both exceeding the benchmark of 0.90, suggesting that the model demonstrates excellent incremental fit relative to a null model. Regarding absolute fit indices, the Root Mean Square Error of Approximation (RMSEA) was 0.053 and the Standardized Root Mean Square Residual (SRMR) was 0.042, both below the recommended cut-off of 0.08, indicating a good fit to the observed data. In other words, all indices consistently demonstrate that the CFA measurement model fits the sample data very well, supporting the appropriateness of the specified four-factor structure (BC, IPE, CI, and SS) for further structural analysis.

**Table 4.** Model fit indices for the CFA Model (N = 209)

Fitting Metric	Numerical	Evaluation Criteria	Result Evaluation
$\chi^2/\text{df}$	1.870	< 3 (Excellent)	Excellent
CFI	0.968	$\geq 0.90$ (Excellent)	Excellent
TLI	0.957	$\geq 0.90$ (Excellent)	Excellent
RMSEA	0.053	< 0.08 (Good)	Good
SRMR	0.042	< 0.08 (Good)	Good

### 5.2.2. Path coefficients and hypothesis test

As shown in **Table 5**, all path coefficients reach significant levels ( $p < 0.001$ ), and research hypotheses H1-H5 are all supported. Specifically, BC has a significant positive effect on IPE ( $\beta = 0.786, p < 0.001$ ), indicating that a more complete campus basketball cultural atmosphere, well-organized activities, and effective spirit transmission enhance students' perception of the ideological and political value guidance embedded in basketball activities. BC also has a significant positive effect on CI ( $\beta = 0.235, p < 0.001$ ) and SS ( $\beta = 0.251, p < 0.001$ ). However, the effect sizes are relatively small, suggesting that while BC directly influences students' value shaping, this effect may be further enhanced through other mechanisms. IPE, on the other hand, has a significant positive impact on both CI ( $\beta = 0.462, p < 0.001$ ) and SS ( $\beta = 0.487, p < 0.001$ ), with larger effect sizes than the direct impact of BC. This indicates that the value guidance provided by IPE in basketball activities plays an important role in shaping university students' CI and SS.

**Table 5.** SEM path relationship and hypothesis test results (N = 305)

Path Relationship	Estimate	S.E.	C.R.	P-value	Hypothesis Testing
BC→IPE	0.786	0.042	18.714	***	Support H1
BC→CI	0.235	0.058	4.052	***	Support H2
BC→SS	0.251	0.056	4.482	***	Support H3
IPE→CI	0.462	0.067	6.896	***	Support H4
IPE →SS	0.487	0.063	7.730	***	Support H5

\*Note: \*\*\*  $p < 0.001$

As for research hypotheses H6 and H7, this study employed the Bootstrap method (5,000 resamples) for testing. The results are shown in **Table 6**.

**Table 6.** Mediation effect (ME) Bootstrap testing results

MediatingPath	Indirect Effect	SE	95% Confidence Interval	ME Proportion	Significant
BC→IPE→CI	0.363	0.041	[0.285, 0.447]	60.77%	Yes
BC→IPE→SS	0.383	0.039	[0.308, 0.461]	60.40%	Yes
Total Mediating Effect	0.746	0.059	[0.631, 0.865]	60.58%	Yes

From **Table 6**, it is observed that the mediating effect of IPE between BC and CI is significant, with an indirect effect value of 0.363, 95% confidence interval [0.285, 0.447] not containing 0, and the mediating effect proportion reaching 60.77%, indicating that approximately 60.77% of the total effect of this path is realized through IPE (supporting H6). At the same time, the mediating effect of IPE between BC and SS is also significant, with an indirect effect value of 0.383, 95% confidence interval [0.308, 0.461] not containing 0, and the mediating effect proportion being 60.40% (proving H7). The total mediating effect value is 0.746, 95% confidence interval [0.631, 0.865] not containing 0, indicating that IPE plays a key mediating role in the process of BC influencing university students' CI and SS. Based on the comprehensive results of SEM and mediation effect analysis, the "BC—IPE—CI/SS" model constructed in this study is fully verified, with IPE playing a core mediating role in the model.

## 5. Discussion

This study empirically examined the structural relationships among BC, IPE, CI, and SS using a SEM approach. The findings not only validate existing theoretical perspectives but also provide new insights into the value-shaping

mechanisms of sports culture in higher education.

First, BC was found to have a strong and significant positive effect on IPE ( $\beta = 0.786$ ), indicating that a well-developed campus BC enhances the effectiveness of IPE. This finding supports Yang Li's (2023) "practice-cognition-re-practice" closed-loop model, which emphasizes the transformation of abstract values into experiential learning through sports practice. It also confirms Qu Yanchao's (2024) argument that sports culture serves as an important supplement to traditional IPE by addressing its limitation of overemphasizing theoretical instruction. Through participation in basketball activities, students internalize values such as teamwork, discipline, and perseverance in a more tangible and engaging manner.

Second, BC has significant direct effects on both CI ( $\beta = 0.235$ ) and SS ( $\beta = 0.251$ ), although the effect sizes are relatively modest. This suggests that while BC contributes to students' value development, its direct influence is limited without structured educational guidance. This finding aligns with Ji Delin (2022) and Yu Guojiang (2023), who emphasized that BC is a multidimensional system whose educational function depends on the integration of material, institutional, and spiritual dimensions.

More importantly, IPE plays a substantial mediating role in the relationship between BC and both CI and SS, accounting for over 60% of the total effect. This result addresses a key gap in previous research regarding the mechanism through which sports culture influences value formation. It also corroborates the four-stage integration framework proposed by Chang Yuanyuan et al. (2024), which highlights the process of "practical experience-emotional resonance-cognitive sublimation-behavioral transformation." From the perspective of social identity theory (Tajfel & Turner, 2004), basketball participation provides a context for group identification, while IPE strengthens this identification by guiding value interpretation, thereby enhancing students' sense of belonging and collective responsibility.

Furthermore, IPE exerts a stronger influence on CI ( $\beta = 0.462$ ) and SS ( $\beta = 0.487$ ) than BC's direct effects, indicating that IPE is the key driver of value shaping. This finding is consistent with the fundamental educational goal of "cultivating virtue" in higher education. In addition, the significant impact on SS reflects the contemporary emphasis on perseverance, resilience, and sustained effort among youth, as highlighted in recent studies on the SS of the new era. The results also confirm that sports contexts, particularly competitive basketball scenarios, provide effective environments for cultivating such qualities.

From a practical perspective, the findings support the "curriculum-activities-competitions" trinity model of BC construction and emphasize the necessity of embedding ideological and political elements into all aspects of sports participation. In the context of Dongguan, a "National Basketball City," universities should further leverage regional cultural advantages to deepen the integration of sports culture and value education, thereby addressing the current imbalance between activity-oriented development and value-oriented outcomes.

## 6. Conclusion

This study constructed and empirically validated a structural model linking BC, IPE, and student value development (CI and SS) in the context of universities in Dongguan. The main conclusions are as follows.

Firstly, BC serves as an important practical carrier for value education in universities. A strong campus BC not only enhances students' engagement in sports activities but also contributes to the development of CI and SS. This demonstrates that sports culture possesses both functional and educational significance.

Secondly, IPE plays a central mediating role in the value-shaping process. The findings show that more than 60% of the effect of BC on CI and SS is realized through IPE, indicating that sports participation alone is insufficient for deep value internalization. Instead, structured ideological guidance is essential for transforming experiential participation into stable value orientations.

Thirdly, CI and SS exhibit a synergistic development pattern. Through participation in basketball activities, students strengthen their sense of group belonging and collective honor, which in turn motivates persistent effort and goal-oriented

behavior. This reflects a dynamic interaction between identity formation and behavioral expression.

Fourthly, this study provides practical implications for higher education institutions. Universities should construct an integrated educational system that combines BC as a carrier, IPE as guidance, and student development as the goal. Specifically, efforts should focus on improving the “curriculum–club–competition” system, strengthening the spiritual dimension of BC, and promoting the transformation from activity-oriented practices to value-oriented education.

Finally, despite these contributions, this study has certain limitations. The sample is limited to universities in Dongguan, which may affect the generalizability of the findings. In addition, the cross-sectional design restricts causal inference. Future research could expand to different regions and sports contexts, and adopt longitudinal or mixed-method approaches to further explore the dynamic mechanisms of sports-based value education.

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## Disclosure statement

The authors declare no conflict of interest.

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