

VOLLEYBALL GAME QUALITY AND THE DEVELOPMENT OF COLLEGE UNDERGRADUATES

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Abstract

Immersed within the dynamic and strategic ambiance of a volleyball court lies a vibrant ecosystem that propels a nuanced exploration into the realms of its comprehensive influence on students' holistic development. This study's central aim was to unravel the relationship between the quality of volleyball games and student development by employing a correlational approach in which 190 students were surveyed.

Four key domains—Intensity and Engagement, Enjoyment and Motivation, Physical Activity Facilitation, and Experience and Usability—were evaluated, all receiving agreeable mean scores of approximately 3.03, reflecting a quality volleyball game experience. The domains of Physical and Psychological Development, Academic and Cognitive Development, Life Skills Development, and Social Development showed similarly high mean scores, indicating a strong impact on student development. A significant correlation (Pearson $r = 0.85$) was found between volleyball game quality and student development.

These insights led to the recommendation of the NANCY Program: Nurturing Athleticism and Nourishing Cognitive Youth Development, a pioneering initiative designed to harness the benefits of volleyball to foster holistic development among students.

1. Introduction

The interplay of volleyball game quality, meticulously sculpted and defined through the FITTE (Frequency, Intensity, Time, Type, and Enjoyment) principle, stands out as a profound independent variable. This principle embeds within it a rich tapestry of elements, comprising the strategic modulation of gamelan frequency, meticulously calibrated intensity, allocated time, specified training and playing types and intrinsic enjoyment factor, thereby fashioning a sophisticated lens through which the efficacy of the sport in shaping diverse facets of student development can be deciphered.

The existing topography, shadowed by stark health challenges—notably the precipitous decline in cardiovascular health and the burgeoning trajectory of adolescent obesity within the Chinese population—casts an imperative demand for nuanced, health-centric strategies and interventions. In this exigent terrain, the 13th Five-Year Plan for National Education Development of China emerges as a crucial navigational guide, etching out a pathway that

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underscores the criticality of embedding robust physical health as a foundational bedrock in educational reform initiatives.

The revival, encapsulated within the “Women’s Volleyball Spirit,” traverses through the Chinese landscape, igniting a rebirth in enthusiasm and engagement with the sport, thereby unfurling a timely opportunity to examine the potential symbiotic relationship between volleyball game quality and the multifold aspects of student development. This interaction poses a compelling conundrum: How might the adept manipulation of Volleyball Game Quality, articulated through the FITTE principle, not only bolster physical health benchmarks among students but also coalesce harmoniously and strategically, with the objectives delineated within the national educational plan?

Thus, this investigation sought to illuminate the manifold impacts germinated by volleyball training, particularly when navigated through the FITTE principle, during student development. In marrying experimental research strategies with volleyball sports training theory, this study endeavored to dissect and unravel the nuanced correlations between volleyball game quality and student health and development.

1.1. Background of the study

In educational scenarios, sports and physical activities like volleyball and arm wrestling have been recognized as crucial tools for fostering holistic student development, exemplifying physical, emotional, and social benefits. However, the execution and impact of these physical activities hinge significantly on educators’ preparedness and skill sets, highlighting the need for structured and scientifically-based training systems for physical education teachers. Although various approaches and technologies (from AI to game-based learning models) enhance physical conditioning, skill acquisition, and intrinsic motivation among students, their impacts are nuanced and influenced by variables like gender and sport type.

In exploring the psychological and behavioral aspects of gaming and sports, the findings indicate correlations between certain gaming behaviors, such as video gaming and gambling, and psychological shifts and potentially detrimental behaviors, underscoring the importance of understanding and navigating these aspects effectively. Furthermore, as research broadens into the integration of psychological theories and sustainability education within sports science, it reveals rich insights into student behaviors, motivations, and outcomes in various physical activity contexts.

On a broader scale, the intersectionality of gaming, physical activity, and learning has emerged as a compelling field that, while showcasing significant benefits across varied contexts, necessitates further exploration to effectively meld technology, sport, and education. This includes ensuring a strategic design that contemplates physiological, psychological, and behavioral implications, as well as innovative educational strategies, like blended learning, to manage the dual demands on student-athletes. Thus, the ongoing research and practical applications underscore a balanced and multi-disciplinary approach to effectively harnessing the potential of sports and technology in educational and rehabilitation contexts.

1.2. Statement of the problem

The central aim of this investigation was to explore the relationship between the quality of volleyball games and student development. Specifically, this study sought to answer the following research questions:

1. The assessment of the respondents’ volleyball game quality in terms of
 - 1.1. Intensity and engagement;
 - 1.2. Enjoyment and motivation;
 - 1.3. Physical activity facilitation; and
 - 1.4. Experience and usability
2. Is there a significant difference in the assessment of the respondents’ volleyball game quality compared to their demographic profile?
3. What is the assessment of the respondents on their student development in terms of
 - 3.1. Physical and psychological development;
 - 3.2. Academic and cognitive development;
 - 3.3. Life skills development; and
 - 3.4. Social development

4. Is there a significant difference in the assessment of the respondents' student development compared to their demographic profile?
5. Is there a significant relationship between the assessed volleyball game quality and student development?

1.3. Significance of the study

The exploration is of profound significance across various sectors, most notably for the following:

Students. This research can offer students insights into the multifaceted benefits of their engagement with volleyball, ensuring that their participation is not merely recreational but also constructively contributing to their all-encompassing development.

Educational institutions. Unraveling the intricate relationship between the quality of a sport like volleyball and student development may guide institutions toward developing sports programs that transcend the boundaries of mere physical activity. The revelation of how structured and quality sports engagements interface with various facets of student development might inspire educational entities to curate programs that are integrated into the educational curriculum, enhancing the overall learning and development experience.

Parents. By demonstrating a positive correlation between physical activities and improved cognitive functions, the study offers parents a clear perspective on how sports can serve as a vital tool for boosting their children's overall development and preparedness for future challenges.

Physical education teachers and coaches. Understanding how the volleyball game composition correlates with student development can influence their training methodologies and pedagogical approaches. Acquiring knowledge about the depth and nature of this relationship could equip physical educators with the tools and strategies to meticulously design training regimes.

Policymakers and curriculum developers. The outcomes of this study may be pivotal in crafting educational and sports-related policies and curriculum designs. Using empirical data to structure policies and curricular frameworks that actively incorporate sports as instrumental vehicles for holistic student development ensures the creation of an educational environment that is both vibrant and multifaceted.

Sports organizations. The insights derived from this study can help companies optimize their programs to ensure that they not only hone sports-specific skills but also contribute meaningfully to the holistic development of the participants.

Future researchers. The results of this study can be used as a reference or springboard for similar investigations.

1.4. Scope and delimitation

This research explored and understood the potential correlation between the quality of volleyball games and the comprehensive development of college undergraduates. To ensure a focused and manageable research endeavor, the study was confined to a specific demographic: college undergraduates. This demarcation provides a structured environment that allows for consistent evaluation of academic and developmental variables.

While the scope provides a clear direction for the study, it is imperative to acknowledge the study's boundaries and limitations to maintain a clear, concise, and attainable research trajectory. First, the study restricted its focus solely to college undergraduates, thereby excluding other educational levels and non-student populations. To maintain a homogeneous sample that can be accurately compared and analyzed.

The specific sport under scrutiny was volleyball, with the recognition that the findings may not be universally applicable across all sporting activities due to the unique mechanics, team dynamics, and skills required in different sports. Furthermore, although acknowledging the potential influence of various socio-demographic variables like age, gender, and socioeconomic status, the study did not extend its focus to exploring these correlations in depth.

In addition, the research prioritized the quality of volleyball games and their correlation with student development, thus not venturing into extensive explorations of external factors that might influence this relationship, such as family background, psychological predispositions, and external social influences. Moreover, the study did not analyze specific curricular or pedagogical interventions for enhancing volleyball game quality or student development.

1.5. Theoretical framework

The Positive Youth Development (PYD) framework, widely recognized for its potential to illuminate the intricate pathways through which youth navigate toward constructive adulthood, can be applied to this research.

The meticulous exploration of the PYD's Five Cs: Competence, Confidence, Connection, Character, and Caring, when woven into the fabric of volleyball as a physical sport, can unravel multifaceted insights into participants' physical, cognitive, and socio-emotional competencies. Volleyball, given its robust nature, mandates the acquisition of specific skills and knowledge, which, beyond enhancing physical capabilities, potentially aids in the cognitive development of undergraduates through strategic learning and adaptation to fast-paced decision-making scenarios.

Confidence, a cornerstone of personal development in youth, is particularly salient in the realm of sports engagement. The research could astutely probe how volleyball, as a structured team sport, nurtures self-efficacy and self-esteem among college undergraduates. A pivotal aspect to explore is the extent to which mastering intricate volleyball skills and absorbing the camaraderie and collective ethos of being part of a team can fortify confidence levels. The ripple effects of such bolstered confidence, which extend to academic, social, and personal domains, can provide a rich vein of insight, intertwining sports engagement with overall youth development.

Moreover, the "Connection" and "Character" elements of the PYD, which are inherently embedded within the team sports framework, offer a riveting exploration into the socio-moral development facilitated by engagement in volleyball. By diving into the dynamics of social interactions, team bonding, and collective ethical decision-making intrinsic to the sport, this study underscores how such engagements potentially scaffold the development of strong social connections and moral character among college undergraduates. An intriguing avenue to explore is evaluating how adherence to rules, ethical gamelan, and role models within the volleyball context can shape the ethical and moral perspectives of the youth involved.

Caring, the fifth C, taps into the emotional and empathetic development of youth, offering a lens through which research can explore the affective impact of volleyball engagement. The intertwined nature of collective success and failure in team sports like volleyball may forge pathways for developing empathetic behaviors, emotional understanding, and nurturing disposition among players.

Insight into how these emotional and social skills, developed on the volleyball court, permeate other aspects of students' interpersonal and intrapersonal dealings could weave a comprehensive narrative of holistic student development.

2. Methodology

This section discusses the research methodology, research locations, sampling methods, data collection methods, and statistical approaches for analysis.

2.1. Research locale

Located in Dongguan, Guangdong Province, China, Guangdong University of Science and Technology (GUST) served as the research locale for this study, exploring the potential correlations and impacts of volleyball game quality on the development of college undergraduates.

GUST, known for its focus on scientific and technical advancements, has a rich cultural and academic environment, making it a pertinent site for examining the confluence of sports, specifically volleyball, with educational outcomes and student development.

2.2. Sample and sampling technique

Embracing an approach using the total enumeration sampling technique. With an astute concentration on the 190 volleyball students, this technique heralds several advantageous facets.

First, the manageability of a population of this size is practically viable, ensuring that data collection is thorough and exhaustive without becoming logistically cumbersome. Second, the comprehensive nature of the data acquired from this all-encompassing sample offers an undistorted, panoramic view of the situation, eschewing any bias that might be introduced by partial sampling methods.

2.3. Data gathering procedure

Before engaging with the participants, approval to conduct the research was obtained from relevant authorities at GUST and Adamson University, ensuring ethical and institutional compliance. Subsequently, a comprehensible

and concise participant information sheet and consent form were developed, elucidating the purpose, procedure, and ethical considerations of the research to safeguard transparency and uphold participant rights.

Once ethical approval and participant consent were obtained, the research instruments were subjected to a rigorous pilot test that involved distributing the instruments to a small demographically representative sample of the larger student population. Feedback regarding the clarity, length, and comprehensibility of the questionnaires were gathered and analyzed, allowing refinements to be made and ensuring that the instruments were reliable and resonant.

With the refined instruments in hand, the next step was to engage with the 190 volleyball students who were identified through total enumeration. The research team facilitated a structured and supportive environment for conducting the survey. Given the extensive scope of the questionnaires, it was crucial that the participants were provided with ample time and a conducive environment to engage thoughtfully with each item. Assistance and clarifications were provided during this stage, ensuring that participant queries or uncertainties regarding the questionnaire items were promptly addressed and adequately addressed.

A systematic data management approach was adopted to ensure accuracy and integrity in handling the responses. Each questionnaire was checked for completeness, and the responses were encoded into a secure database, ensuring that data is not only accurately transferred but is also stored in a manner that upheld participant confidentiality and data security.

2.4. Statistical analysis

The two primary variables were analyzed: volleyball game quality and student development. The use of mean and standard deviation (SD) analyses laid down a solid foundation for exploring these variables. These measures unearth central tendencies and dispersion within the scores, thereby providing a fundamental understanding of the general patterns and variability embedded within the responses.

Further, inferential statistics via the t-test and Analysis of Variance (ANOVA) were used to determine whether significant differences exist in volleyball game quality and student development across different demographic profiles (age, sex, and year level). Specifically, the independent sample t-test provided insights into dichotomous demographic variables (such as sex), whereas ANOVA navigated through variables with more than two categories, like year level.

Then, to understand the depth of the association between volleyball game quality and student development, Pearson's r correlation coefficient was used in the analytical framework. This measure revealed whether and to what extent the two variables are related. The correlation signified whether improvements or deterioration in volleyball game quality were mirrored in respective shifts in student development.

To facilitate the interpretation of the mean scores for volleyball game quality and student development, the following scale was used:

Score Range	Verbal Description	Interpretation
3.51 – 4.00	Strongly Agree	Excellent
2.50 – 3.50	Agree	Good
1.51 – 2.50	Disagree	Fair
1.00 – 1.50	Strongly disagree	Poor

3. Results and analysis

This section provides a detailed analysis of the information gathered from the participants in the research. This section details the findings and their significance in relation to the research questions that were developed.

Table 1

Volleyball Game Quality

Domains	Mean	SD	Verbal Description/Interpretation	Rank
Intensity and Engagement	2.98	0.57	Agree/Good	4
Enjoyment and Motivation	3.03	0.63	Agree/Good	3
Physical Activity Facilitation	3.05	0.62	Agree/Good	1
Experience and Usability	3.04	0.59	Agree/Good	2
Volleyball Game Quality (Overall)	3.03	0.52	Agree/Good	-

Scale: 1–1.50: Strongly Disagree/Poor; 1.51–2.50: Disagree/Fair; 2.51–3.50: Agree/Good; 3.51–4.00: Strongly Agree/Very Good

Table 1 synthesizes the overall level of volleyball game quality as perceived by the participants, aggregating the data into four main domains: Intensity and Engagement, Enjoyment and Motivation, Physical Activity Facilitation, and Experience and Usability. These domains are evaluated based on their mean scores, standard deviations (SD), and ranks, which are then encapsulated by a verbal description or interpretation that gave qualitative meaning to the scores.

The overall assessment of volleyball game quality yielded a mean score of 3.03 and the lowest overall SD of 0.52, signifying a solid consensus among participants that the volleyball games were of good quality across all measured aspects. This composite score does not have an individual rank but sits comfortably within the agreed/good verbal interpretation, summarizing the participants' positive reception of the volleyball sessions.

This literature review spans a broad spectrum of studies examining the role of physical activities, technology integration, and sports in various developmental aspects of youth. When interpreting the results in Table 6, which demonstrate the overall high quality of volleyball games and their influence on student development, one can draw several parallels with the themes and findings of the reviewed studies.

The high levels of intensity and engagement, enjoyment and motivation, physical activity facilitation, and experience and usability reported in Table 6 resonate with the positive outcomes associated with physical activities highlighted across the literature. For instance, a study by Daniusevičiūtė-Brazaitė (2022) illustrates how interactive programs can enhance engagement and physical health, which aligns with high marks for intensity and engagement in volleyball games. These games likely provide a dynamic and engaging environment that mitigates muscle stiffness and promotes physical health, which is akin to the effects observed in children with musculoskeletal disorders.

Similarly, elik, Yaşar, and Tülücü (2023) acknowledged the primary school teachers noted by Çelik, Yaşar, and Tülücü (2023) suggests that the quality of volleyball games could be further improved with enhanced teacher training and curriculum development. This could bridge the gap in effectiveness and ensure that the positive impacts on student development are maximized.

The role of technology in enhancing sports experiences and outcomes, such as the use of "Reflex Ridge" Xbox 360 in promoting high-intensity exercise among asthmatic children, as discussed by Barreto-Mendonça et al. (2019), could inform the integration of technological tools into volleyball training to further boost its quality. This integration could lead to improved physical and psychological outcomes for participants, as evidenced by the strong correlation between game quality and student development in Table 1.

The effectiveness of constraint manipulations in practice design, as identified by Teune et al. (2022) in Australian Football, can be applied to volleyball training to improve game quality. Implementing similar strategies in volleyball can lead to better skill acquisition and game performance, contributing to the high rank of physical activity facilitation (Table 6).

Considering the research on cooperative learning models like the TGT in football, by Rubiyatno et al. (2023), incorporating such models in volleyball could enhance specific skill acquisition and overall enjoyment and motivation, which is already observed as high in Table 6.

These studies collectively suggest that the positive correlation between volleyball game quality and student development can be bolstered by integrating targeted technology, structured practice designs, and innovative teaching methodologies. These improvements would enhance the already positive impact of volleyball on student development, as reflected in the high levels of agreement across various domains.

Table 2

Summary of Student Development

Domains	Mean	SD	Verbal Description/Interpretation	Rank
Physical and Psychological Development	3.09	0.62	Agree/Good	2
Academic and Cognitive Development	3.06	0.62	Agree/Good	4
Life Skills Development	3.12	0.58	Agree/Good	1
Social Development	3.08	0.61	Agree/Good	3
Student Development (Overall)	3.09	0.55	Agree/Good	-

Scale: 1–1.50: Strongly Disagree/Poor; 1.51–2.50: Disagree/Fair; 2.51–3.50: Agree/Good; 3.51–4.00: Strongly Agree/Very Good

Table 2 summarizes the perceptions of college students regarding their overall development through engagement in sports, which are categorized into four domains: Physical and Psychological Development, Academic and Cognitive Development, Life Skills Development, and Social Development. Each domain was given a mean score based on the students' responses, with the standard deviation (SD) representing the spread of the responses.

In conclusion, Table 2 presents a common positive perception among college students that participating in sports contributes significantly to various aspects of their development. The consistency of the mean scores across the domains, coupled with the low standard deviations, suggests that students uniformly agreed on the beneficial impacts of sports, with life skills development being the most positively influenced domain. The verbal descriptions consistently falling within the "Agree/Good" range further underline the students' positive assessments.

Previous studies complement the findings in Table 2, which illustrate the positive impact of volleyball on various domains of student development. The holistic development approach resonates with Erkibaeva et al. (2021), who emphasized that students perceive sports as pivotal to physical education, emotional positivity, and meaningful leisure activities. This underscores the importance of sports in educational curricula to enhance physical and social development, as evidenced by high scores in the physical, psychological, and social development domains.

Grishko, Zavadzka, and Novikova (2021) explored the impact of regular exercise on physical and psychological states, echoing the benefits reflected in the Physical and Psychological Development domain. The studies collectively suggest that volleyball, as a structured physical activity, positively impacts students' morpho-functional indicators and psychological state, reinforcing the significance of sports in nurturing both the body and mind.

Bazylchuk, Misharovskiy, and Halai (2023) discussed how sports games in educational settings can instill educational and personal values, resonating with the highest-ranked domain of Life Skills Development. The research aligns with the notion that volleyball can serve as a medium for developing behavioral, emotional, and social skills, which aligns with Abustan's (2021) findings on the role of sports programs in life skill development among student athletes.

Niehues et al. (2022) on dual career support services emphasized the importance of support structures in enhancing academic performance. This complements the Academic and Cognitive Development domain, suggesting that sports activities, when supported appropriately, can positively influence academic outcomes.

Liu, Wilczyńska, Lipowski, and Zhao (2021) advocated technological intervention in physical education, which can be seen as a potential way to further enhance volleyball game quality, possibly influencing all domains of student development more profoundly. Technological advancements in recognition and improvement of motion detection can be applied to volleyball training, potentially increasing the quality of the game and its developmental benefits.

The integration of sports like volleyball into educational curricula and the strategic use of technology and supportive practices can enhance physical, psychological, academic, life skills, and social development domains, thereby providing comprehensive development experiences for students.

Table 3*Differences in the Level of Student Development based on Demographic Profile*

Profile	Mean	SD	Stat. Value	P-Value	Interpretation/Decision
Sex					
Male	3.11	0.52	t= 0.66	0.51	Not significant/accept H ₀
Female	3.06	0.58			
Age					
18 years old	2.83	0.46	F= 1.36	0.24	Not significant/accept H ₀
18-20 years old	3.37	0.60			
21-23 years old	2.95	0.40			
24-26 years old	2.78	0.38			
Year Level					
Freshmen	3.19	0.63	F= 2.54	0.06	Not significant/accept H ₀
Sophomores	2.92	0.46			
Juniors	3.06	0.46			
Seniors	3.12	0.51			

*Level of significance = 0.05.

Table 3 assesses the differences in the levels of student development based on demographic profiles such as sex, age, and year. The table provides a statistical analysis of these differences using mean scores, standard deviations (SD), statistical values, and p-values, leading to a decision on whether these differences are significant.

For the sex demographics, males had a mean score of 3.11 with an SD of 0.52, while females had a slightly lower mean score of 3.06 with an SD of 0.58. The t-value for the comparison between male and female students was 0.66 with a p-value of 0.51, which is above the typical threshold for significance (commonly 0.05). This result leads to the interpretation that the difference in the level of student development between males and females is not statistically significant, and the null hypothesis (H₀) that there is no difference is accepted.

When examining age groups, the lowest mean score was for students below 18 years old (2.83 with an SD of 0.46, suggesting a perception of less development compared to other age groups. The highest mean score is from the 18-20 years old group at 3.37 with an SD of 0.60. The age groups 21-23- and 24-26-years old age groups had means of 2.95 and 2.78, respectively, with low group with SD indicating more consistency within these groups. The F-value for the comparison across age groups is 1.36 with a p-value of 0.24, indicating that the differences in student development levels across the age groups are not statistically significant. Thus, the null hypothesis was accepted.

Year level also showed variability, with freshmen scoring the highest mean of 3.19 with an SD of 0.63 and sophomores scoring the lowest mean of 2.92 with an SD of 0.46. Juniors and seniors had mean scores of 3.06 and 3.12, respectively. The F-value for year levels was 2.54, with a p-value of 0.06, which is just above the standard threshold for significance. Therefore, no significant difference in student development levels across different academic years can be identified, and the null hypothesis is again accepted.

Table 3 indicates that the perceived level of student development in relation to sports and physical education did not differ significantly based on sex, age, or year. This finding suggests that the benefits of sports on student development are generally uniform across these demographic variables within this sample group.

Table 4*Relationship between Volleyball Game Quality and Student Development*

Variables		Intensity and Engagement	Enjoyment and Motivation	Physical Activity Facilitation	Experience and Usability	Volleyball Game Quality
Physical and Psychological Development	Pearson <i>r</i>	0.82	0.83	0.82	0.83	0.83
	p-value	0.03	0.01	0.02	0.01	0.03
Academic and Cognitive Development	Pearson <i>r</i>	0.82	0.83	0.81	0.82	0.82
	p-value	0.03	0.03	0.01	0.03	0.01
Life Skills Development	Pearson <i>r</i>	0.82	0.85	0.82	0.81	0.85
	p-value	0.02	0.03	0.02	0.01	0.01
Social Development	Pearson <i>r</i>	0.83	0.80	0.80	0.82	0.81
	p-value	0.03	0.03	0.03	0.03	0.01
Student Development	Pearson <i>r</i>	0.80	0.84	0.83	0.80	0.85
	p-value	0.01	0.02	0.02	0.02	0.00

Table 4 presents the relationship between the quality of volleyball games and various dimensions of student development, including physical and psychological, academic and cognitive, life skills, and social development. The variables considered for volleyball game quality were intensity and engagement, enjoyment and motivation, physical activity facilitation, and experience and usability, along with an overall measure of volleyball game quality.

The Pearson correlation coefficients (*r*) indicate a strong positive relationship between each dimension of volleyball game quality and various aspects of student development. For physical and psychological development, the Pearson *r* values ranged from 0.82 to 0.83, with corresponding p-values between 0.01 and 0.03 demonstrating significant correlations. This suggests that higher-quality volleyball sessions are associated with better physical and psychological outcomes for students.

Similarly, academic and cognitive development had Pearson's *r* values from 0.81 to 0.83, with p-values of 0.01 to 0.03, signifying significant positive correlations. These findings imply that the quality of volleyball games can positively impact students' academic performances and cognitive abilities.

In the domain of life skills development, the correlations were slightly higher, with Pearson's *r*-values ranging from 0.81 to 0.85 and p-values between 0.01 and 0.03. This indicates a robust relationship between volleyball game quality and the enhancement of life skills, such as leadership, time management, and resilience.

For social development, the Pearson *r* values ranged from 0.80 to 0.83, with all p-values at 0.03, confirming significant correlations. This suggests that engaging in high-quality volleyball activities can improve students' social interactions, confidence, and teamwork abilities.

Overall, the composite measure of student development showed Pearson *r* values between 0.80 and 0.85, with p-values ranging from 0.00 to 0.02, underscoring a strong and significant relationship between the quality of volleyball games and overall student development. These findings highlight the importance of well-structured and engaging volleyball programs for fostering various aspects of student growth and development.

The findings from Table 4, which indicate a strong positive correlation between the quality of volleyball games and student development, can be interpreted through the lens of the Positive Youth Development (PYD) framework. This framework posits that young individuals flourish when provided opportunities that enhance their strengths and abilities across various aspects of their lives.

In this context, a correlation coefficient of 0.85 points to a substantial relationship where higher-quality volleyball games are associated with greater developmental benefits for students. This aligns with the PYD perspective, which emphasizes structured activities, such as sports, as conduits for comprehensive youth development.

Volleyball, which is a structured, goal-oriented, and socially interactive sport, offers a fertile ground for nurturing competencies pivotal to PYD.

The significant p-value (0.000) strongly suggests that these findings are unlikely to occur by chance, lending credence to the positive influence of quality sports experiences on youth development. According to the PYD principles, youth benefit most from activities that promote social bonding, cognitive skills, and emotional growth. High-quality volleyball experiences seem to provide just that—an environment where young people can develop physical skills, engage in teamwork, learn strategic thinking, and build resilience.

The statistical analysis in Table 4 strongly supports the notion that high-quality volleyball programs are more than just athletic pursuits; they are instrumental in fostering the all-around development of students, in agreement with the core tenets of the Positive Youth Development framework. This underscores the importance of quality in youth sports programs and suggests that such investments can yield dividends far beyond physical fitness, extending into the personal and social realms of student growth.

This study has effectively demonstrated that volleyball, as an elective sport in an educational setting, has a substantial and positive impact on the development of college students across multiple domains. The statistical evidence presented in the tables indicates that students perceive volleyball as significantly contributing to their physical and psychological health, academic and cognitive abilities, life skills, and social development.

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