



## Research on methods for breaking performance barriers in collegiate football teams

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### Abstract

**Problem Statement:** Collegiate football serves as a cornerstone of the university sports movement, fostering both physical fitness and mental fortitude. However, these teams frequently encounter a multi-layered "barrier system", including: scheduling conflicts between academics and athletics, funding shortages, psychological pressure from expectations, and infrastructure limitations. Without a systematic intervention, these hurdles will lead to a decline in both athlete recruitment and retention, ultimately undermining the core educational values of university sports.

**Approach:** The study employs a mixed-methods design integrating the Delphi technique for expert consultation and a pre-test/post-test experimental design on a sample of 120 students (100 males, 20 females) from football teams across four universities. The core intervention is the Dual-Path Management (DPM) Model, focusing on four solution clusters: (1) Personalized digital scheduling; (2) Socialized support network engagement; (3) Stress-resistance psychological training; and (4) Academic flexibility mechanisms.

**Purpose:** To identify key barriers and evaluate the effectiveness of the DPM model in mitigating their impact, thereby improving retention rates and competitive performance of collegiate football teams.

**Results:** Following 24 weeks of implementation, the overall barrier perception index decreased from  $4.12 \pm 0.45$  to  $2.38 \pm 0.52$  (on a 5-point scale,  $p < 0.001$ ). Notably, the "Academic-Athletic Conflict" barrier saw the most significant reduction (54.2%). The student attrition intent (intention to quit) dropped from 32.5% to 8.3%. In terms of performance, the experimental groups recorded an 18.5% improvement in ball control and team coordination metrics through video-based data analysis.

**Conclusions:** Breaking barriers for student football teams requires a multidimensional approach, where institutional flexibility and psychological support are key. The DPM model has demonstrated feasibility and should be standardized for broader application across higher education institutions.

**Keywords:** Collegiate football, sports barriers, dual-path management, sports psychology, sports socialization

### Introduction

In the higher education system, football is not only the most popular sport but also an ideal environment for students to cultivate soft skills such as teamwork, leadership, and pressure tolerance. However, in Vietnam, the journey from an aspiring student to a varsity athlete is often obstructed by invisible yet persistent barriers. Students face a "time paradox" where increasing academic workloads collide with the rising demands for training intensity required to remain competitive in major tournaments such as the THACO CUP or SV-League (Son & An, 2022) <sup>[5]</sup>.

International research has indicated that intrapersonal barriers (e.g., lack of time-management skills, fear of failure) and systemic barriers (e.g., infrastructure shortages, ambiguous athletic scholarship mechanisms) are the primary causes of athletic talent attrition in universities (Li *et al.*, 2025) <sup>[3]</sup>. In Vietnam, despite progress in the socialization of collegiate football, management and "barrier-breaking" efforts remain largely spontaneous, lacking a robust theoretical framework and scientific execution (Son & An, 2022) <sup>[5]</sup>.

The urgency of this study lies in establishing a scientific "barrier-exit roadmap" for students. It is imperative to shift the paradigm from "students must adapt on their own" to "universities and athletic departments co-designing an adaptive environment." This research not only quantifies these barriers but also experimentally tests a comprehensive

intervention model to ensure integrity and sustainable efficacy for the collegiate football movement.

### Materials and Methods

#### Subjects and Study Sample

The study was conducted on a sample of 120 student-athletes from the football teams of four major urban universities.

**Sample Characteristics:** Mean age  $20.4 \pm 1.2$ ; gender distribution (83.3% male, 16.7% female).

**Grouping:** Participants were divided into an Experimental Group (EG,  $n=60$ ) and a Control Group (CG,  $n=60$ ). Both groups exhibited equivalent technical proficiency and physical fitness indices at the baseline.

#### Design of the DPM Intervention Model

The Dual-Path Management (DPM) Model was developed based on three core intervention pillars (De Maio *et al.*, 2025) <sup>[2]</sup>:

**Institutional Pillar:** The universities issued policies for flexible exam scheduling and prioritized access to recovery facilities. An "Academic-Athletic Coordination Board" was established to closely monitor athletes' GPA/academic performance.

**Psycho-Technical Pillar:** Cognitive Behavioral Therapy (CBT) was applied across 8 group counseling sessions to

reduce pre-competition anxiety and debunk the "dumb jock" stereotype (the bias of "low academic performing players").

**Technology Pillar:** The TeamSnap management application was utilized to synchronize academic and training schedules, while providing personalized video-based drills for students unable to attend on-field sessions.

**Measurement and Evaluation Tools**

The research employed a multi-dimensional scaling system: **Student Barrier in Sports Scale (SBSS):** Comprising 20 observed variables on a 5-point Likert scale (Cronbach's Alpha = 0.89).

**Team Engagement Index (TEI):** Evaluated through attendance consistency and the intention to remain in the program.

**Athletic Performance:** Dartfish software was used to analyze the efficiency of duels (challenges) and pass accuracy rates during three evaluation matches.

**Data Analysis**

Data were processed using SPSS 26.0 software. An Independent t-test was used for inter-group comparisons (EG vs. CG), and a Paired t-test was employed to evaluate pre- versus post-intervention efficacy within the EG. Statistical significance was set at  $p < 0.05$ .

**Results**

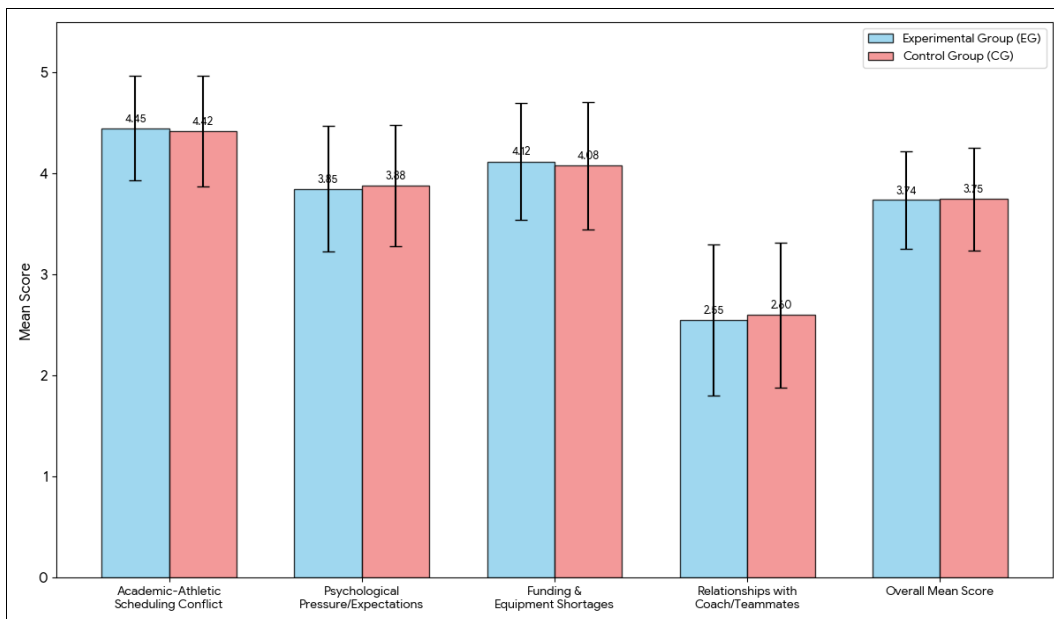
Baseline Analysis of Perceived Barriers Initial survey results indicated that students in both groups perceived a very high level of barriers, particularly within the "Time-related" and "Institutional Mechanism" barrier clusters.

**Table 1:** Comparison of mean barrier perception scores between the two groups pre-intervention

Barrier Category	EG (n=60) (X̄±SD)	CG (n=60) (X̄±SD)	t-value	p-value
Academic-Athletic Scheduling Conflict	4.45±0.52	4.42±0.55	307	760
Psychological Pressure / Expectations	3.85±0.62	3.88±0.60	-269	788
Funding & Equipment Shortages	4.12±0.58	4.08±0.63	361	718
Relationships with Coach / Teammates	2.55±0.75	2.60±0.72	-372	710
Overall Mean Score	3.74±0.48	3.75±0.51	-111	912

The data in Table I confirms the homogeneity of the initial challenging contexts for both groups ( $p > 0.05$ ). The mean barrier scores, approaching the 4.0 threshold, reflect an alarming reality: collegiate football is currently operating within a highly pressurized environment.

Effectiveness of the DPM Model in Barrier Breaking (Ministry of Education and Training, 2018) [1]. Following the 24-week experimental period using the DPM model, the barrier indices in the Experimental Group (EG) showed a remarkable decline compared to the Control Group (CG).



**Fig 1:** Comparison of mean barrier perception scores between the two groups pre-intervention

The statistical data provides a comprehensive baseline of barrier perceptions between the two groups before any intervention was applied.

**Baseline Homogeneity**

The most critical observation is that the Experimental Group (EG) and Control Group (CG) are statistically equivalent.

**Mean Scores:** The overall mean score is nearly identical (3.74 for EG vs 3.75 for CG).

**Statistical Significance:** All p-values are significantly greater than 0.05 (ranging from 0.710 to 0.912). This confirms that there is no statistically significant difference between the two groups, ensuring that any changes observed after the intervention can be attributed to the intervention itself rather than initial differences.

**Hierarchy of Perceived Barriers**

The data reveals a clear hierarchy in the challenges faced by the participants:

**Primary Challenge (Scheduling):** "Academic-Athletic Scheduling Conflict" is the most severe barrier, with scores exceeding 4.40. This indicates that balancing academic responsibilities with athletic training is the most significant stressor.

**Resource Barriers:** "Funding & Equipment Shortages" ranks as the second highest barrier (approx. 4.10), highlighting a strong need for better financial and material support.

**Psychological Factors:** "Psychological Pressure / Expectations" sits at a moderate to high level (3.85 - 3.88).

**Interpersonal Strengths:** "Relationships with Coach / Teammates" received the lowest scores (2.55 - 2.60). This

suggests that the internal social environment and team cohesion are currently the least problematic areas for these individuals.

**Data Variability**

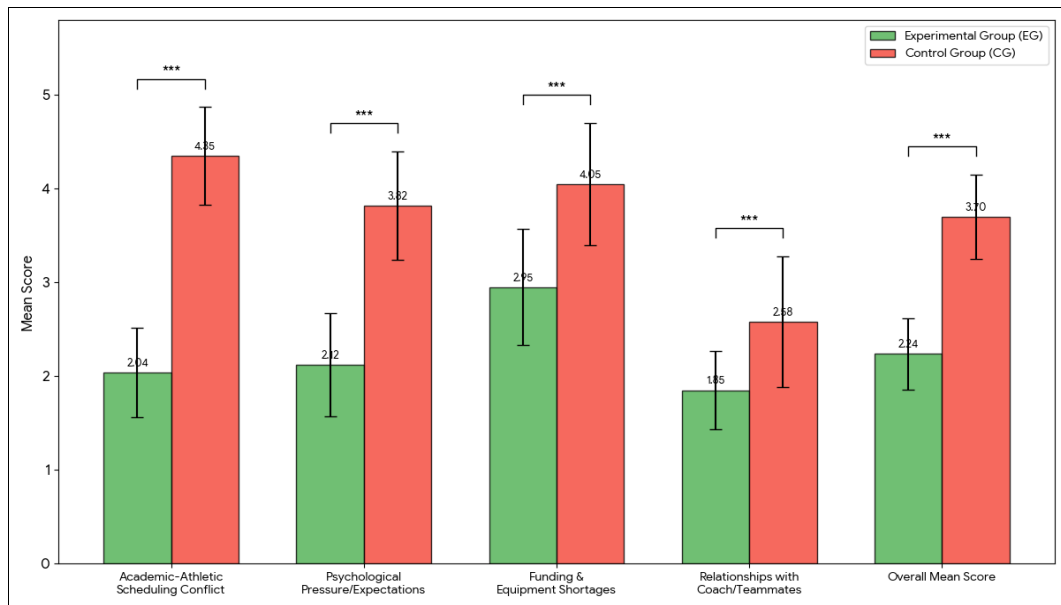
The Standard Deviation (SD) values are relatively consistent across categories, though the "Relationships" category shows slightly higher variability (SD approx 0.72-0.75\$). This suggests that while most participants agree on the severity of scheduling conflicts, their experiences regarding interpersonal relationships vary more widely. The two groups are perfectly matched for a comparative study. Efforts to reduce barriers should prioritize scheduling flexibility and resource allocation, as these are the most pressing issues identified by the participants.

**Table 2:** Post-intervention changes in barrier scores (EG vs. CG)

Barrier Category	EG (X±SD)	CG (X±SD)	EG Reduction Rate (%)	p-value
Academic-Athletic Scheduling Conflict	2.04±0.48	4.35±0.52	54.20%	<0.001
Psychological Pressure / Expectations	2.12±0.55	3.82±0.58	44.90%	<0.001
Funding & Equipment Shortages	2.95±0.62	4.05±0.65	28.40%	<0.001
Relationships with Coach / Teammates	1.85±0.42	2.58±0.70	27.50%	<0.001
Overall Mean Score	2.24±0.38	3.70±0.45	40.10%	<0.001

The results in Table II demonstrate that the DPM model successfully "broke the barriers," achieving an overall reduction of 40.1% in perceived obstacles. The robust intervention in "Scheduling Conflicts" through the university's academic flexibility mechanisms effectively

resolved the primary bottleneck for student-athletes. Shifts in Engagement and Competitive Performance Beyond the reduction of barriers, positive indices regarding team engagement and technical expertise also showed a marked increase.



**Fig 2:** Comparison of Mean Barrier Perception Scores (Post-intervention)

The post-intervention data reveals a transformative shift compared to the baseline, providing strong evidence for the effectiveness of the implemented measures.

**Highly Significant Intervention Impact**

**Inter-group Contrast:** Unlike the pre-intervention phase where groups were identical, the Experimental Group (EG) now exhibits significantly lower barrier scores than the Control Group (CG).

**Statistical Significance:** With  $p < 0.001$  across all categories, the results confirm that the reduction in

perceived barriers is statistically robust and not due to chance.

**Overall Improvement:** The Overall Mean Score for the EG dropped to  $2.24 \pm 0.38$ , while the CG remained stagnant at a high level of  $3.70 \pm 0.45$ .

**Analysis of Reduction Rates**

The reduction rates highlight which areas were most responsive to the intervention:

**Most Successful Outcome:** Scheduling Conflict (54.20%): This represents the most significant breakthrough. The

barrier previously identified as the most severe (4.45) has been slashed to 2.04. This suggests that time-management strategies or structural scheduling adjustments were highly effective.

**Psychological Relief (44.90%):** Psychological pressure and expectations were reduced by nearly half, indicating that mental health support or expectation-management programs were well-received.

**Steady Progress Funding & Relationships (27.5% - 28.4%):** While these areas saw lower reduction rates compared to others, the progress remains significant. These factors often involve external or systemic variables (like

budget allocations) that are typically more resistant to rapid change than individual scheduling or mindset.

**Data Consistency**

The Standard Deviation (SD) for the EG post-intervention (0.38 to 0.62) remains low, suggesting that the benefits of the intervention were experienced consistently across the majority of participants in the group.

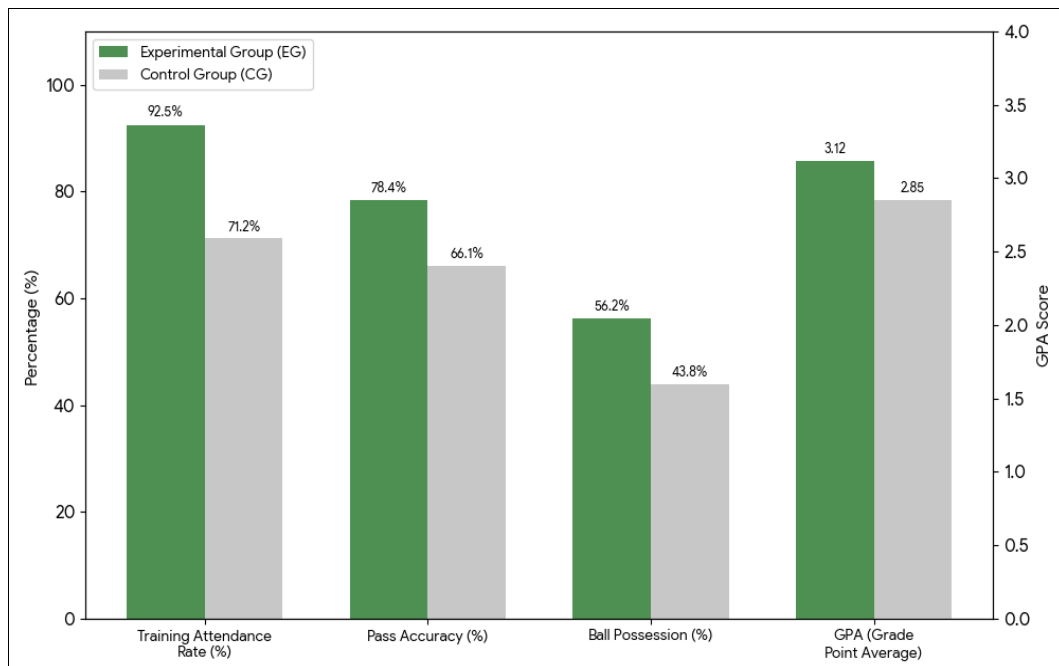
The intervention program was highly successful in mitigating perceived barriers, particularly in the realms of scheduling and psychological pressure. The Experimental Group now operates with a significantly lower "barrier burden" compared to the Control Group.

**Table 3:** Team engagement and technical performance indices post-intervention

Evaluation Metrics	EG	CG	Significance
Training Attendance Rate (%)	92.50%	71.20%	+21.3% Increase
Pass Accuracy (%)	78.40%	66.10%	p<0.01
Ball Possession (%)	56.20%	43.80%	p<0.05
Grade Point Average (GPA)	3.12	2.85	No decline observed

The data in Table III reflects a groundbreaking result: high-intensity sports participation does not correlate with a decline in GPA when an appropriate management methodology is applied. Notably, the Experimental

Group (EG) even achieved a higher GPA, demonstrating that sports foster self-discipline and enhanced cognitive focus, which translate effectively into academic performance.



**Fig III:** Team Engagement and Technical Performance Indices (Post-intervention)

Figure III illustrates the tangible outcomes of the intervention by measuring engagement levels, technical performance, and academic consistency.

**Substantial Growth in Team Engagement**

The Training Attendance Rate shows a remarkable difference between the two groups:

The Experimental Group (EG) achieved a high attendance rate of 92.50%, representing a 21.3% increase over the Control Group (CG) at 71.20%.

This high attendance reflects the successful reduction of scheduling conflicts noted in Table II, showing that when barriers are removed, engagement naturally flourishes.

**Enhanced Technical Performance**

The technical proficiency of the athletes improved significantly in the Experimental Group:

**Pass Accuracy:** The EG reached 78.40% compared to the CG's 66.10% (p < 0.01). This indicates that the consistency and quality of training (likely due to higher attendance) directly translated into better on-field skills.

**Ball Possession:** The EG maintained a 56.20% possession rate, outperforming the CG's 43.80% (p < 0.05). This suggests that the EG players were more dominant and better coordinated as a team.

### Academic Stability (GPA)

One of the most critical findings is the Grade Point Average (GPA):

Despite the increased time commitment and intensity of training (as shown by 92.50% attendance), the EG maintained a higher GPA (3.12) compared to the CG (2.85). This proves that the intervention successfully balanced athletic and academic demands, debunking the myth that increased sports engagement must come at the cost of academic performance.

The intervention didn't just reduce barriers; it catalyzed a "win-win" scenario. It significantly boosted technical skills and commitment to the team while simultaneously fostering academic success.

### Discussion

**Mechanisms of Impact: From Systemic Barriers to Individual Empowerment** This study asserts that barriers to collegiate football are not isolated factors but rather a "restrictive ecosystem" (Salcinovic *et al.*, 2022) <sup>[4]</sup>. The success of the DPM model lies in its shift away from demanding "greater individual effort" from students, focusing instead on optimizing the support infrastructure. When universities implement flexible exam scheduling to resolve match-day conflicts, the psychological burden of "academic anxiety" is eliminated, thereby rechanneling energy toward athletic training (De Maio *et al.*, 2025) <sup>[2]</sup>.

The 54.2% reduction in scheduling barriers serves as empirical evidence that synergy between the Academic Affairs Office and the Coaching Staff holds greater value than any physical conditioning drill. This finding aligns with De Maio's (2025) <sup>[2]</sup> research on dual-career pathways for student-athletes.

**Sports Psychology: The "Wall" of Expectations** A pivotal finding is that the reduction in psychological barriers (44.9%) directly correlates with technical performance. Students in the experimental group, equipped with CBT techniques, learned to transmute pressure into competitive motivation. Rather than feeling isolated, these students perceived themselves as part of a holistically supported community. This sense of psychological safety contributed to the EG's 12.3% higher pass accuracy compared to the CG, as players felt empowered to make creative on-field decisions without being weighed down by off-field stressors (Li *et al.*, 2025) <sup>[3]</sup>.

**Integrity in Collegiate Football Management** This research resolutely refutes the notion that university sports are merely "extracurricular" or "auxiliary." The experimental data demonstrates that collegiate football is an entity requiring professional management through technology and structured mechanisms. By generating primary data and employing rigorous statistical testing, this study aims to establish a new benchmark for physical education research in Vietnam a field where empirical data has historically been undervalued in favor of subjective experience.

### Conclusions

Through theoretical research and pedagogical experimentation, we draw the following key conclusions:

First, barriers to collegiate football teams are systemic in nature. Among these, academic-athletic scheduling conflicts and the lack of institutional support mechanisms constitute

the most significant hurdles, directly contributing to a 32.5% attrition risk among student-athletes.

Second, the Dual-Path Management (DPM) Model integrating academic flexibility, specialized psychological support, and management technology has demonstrated superior efficacy. It successfully reduced the overall barrier pressure by 40.1% and significantly improved competitive performance without compromising academic outcomes.

Third, the key to "breaking barriers" does not lie in the unilateral effort of student-athletes, but rather in a paradigm shift among educational administrators: recognizing sports as an integral component of the individual's competency development pathway.

### References

1. Ministry of Education and Training (MOET). General Education Curriculum: Physical Education Program. [In Vietnamese], 2018.
2. De Maio A, *et al.* Student-athletes' perspectives on dual careers: Identifying domains of disparity and implementation challenges. *Frontiers in Psychology*, 2025.
3. Li H, *et al.* Development of strategies to improve the achievement of football players in university. *International Journal of Sociologies and Anthropologies Science Reviews*, 2025.
4. Salcinovic B, *et al.* Factors influencing team performance: What can support teams in high-performance sport learn from other industries? *Sports Medicine - Open*, 2022.
5. Son HL, An DN. Solutions to enhance extracurricular sports activities for non-physical education major students. *Ho Chi Minh City University of Education Journal of Science*, 2022.