INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 14, Issue 4, (2025) E-ISSN: 2226-6348

The Impact of Human Resources Management on the Performance of Sports-Study Programs in Morocco: Study of the Qualifications and Professional Development of Supervisors

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DOI Link: http://dx.doi.org/10.6007/IJARPED/v14-i4/26795

Published Online: 24 October 2025

Abstract

This study examines the influence of human resources management, with a particular focus on the academic qualifications and continuous training of supervisors, on the effectiveness of sports-study programs in Morocco. Introduced into secondary education in 2019, these programs are designed to help student-athletes achieve a balance between academic success and athletic performance. The research investigates ten programs implemented across three regions—Casablanca-Settat, Rabat-Salé-Kénitra, and Tanger-Tétouan-Al Hoceima—using a mixed-methods approach that combines quantitative assessments with qualitative insights from structured interviews. Program performance was evaluated using three standardized indicators: academic results, athletic outcomes, and overall effectiveness. Findings reveal a significant performance gap linked to the supervisors' profiles. Programs directed by coaches holding university degrees and participating in continuous professional training achieved overall scores 15 to 20 points higher than those led by less qualified staff. A strong correlation was identified between supervisor qualification, ongoing training, and program outcomes ($r > 0.7$). These findings underscore the central role of human capital in the success of dual academic-athletic pathways and highlight the importance of establishing minimum standards for both initial qualifications and continuous training. Limitations include the relatively small sample and contextual differences, suggesting avenues for future research on infrastructure, pedagogical practices, and family support.

Keywords: Sports-Study, Human Resources, Performance, Morocco, Supervision

Introduction

Over the past decades, the early specialization in high-performance sports has raised a critical issue: how can young athletes balance intensive training with academic success? This question is not only educational but also social and economic, as the development of well-prepared student-athletes contributes to healthier youth, stronger sports systems, and more sustainable career pathways. *Sport-study programs* have emerged as a key response to this challenge, aiming to promote the holistic development of student-athletes by combining athletic performance, academic achievement, and personal growth.

In Morocco, this initiative began in 2019 with the launch of the first sport-study programs in public high schools through a partnership between the Ministry of National Education and the Ministry of Youth and Sports. These programs provide student-athletes with adapted schedules, appropriate sports facilities, and enhanced academic support, with the ambition of preparing a generation capable of succeeding in both fields. However, early evaluations revealed several limitations, particularly concerning governance, institutional coordination, and human resource management (Harfi & El-Jazouli, 2022).

The significance of this study lies in addressing these limitations. Beyond sports performance, well-structured sport-study programs can reduce school dropout rates, enhance psychosocial development, and foster social mobility for young people from diverse backgrounds. They also help build a stronger talent pipeline for national sports federations while ensuring that athletes are not deprived of educational opportunities. Policymakers, educators, and sports organizations all stand to benefit from evidence-based insights into how to improve these programs.

Among the key factors for success, the quality of human supervision—especially the academic qualifications and professional development of coaches—emerges as a central yet underexplored lever in the Moroccan context. International studies (Berry & Fowler, 2019; Li et al., 2024) have shown that staff competencies significantly influence not only athletic performance but also the motivation, well-being, and academic success of young athletes. Understanding this link in Morocco is particularly relevant for shaping future policy and guiding resource allocation.

The objective of this study is therefore to empirically analyze the impact of human resources—specifically, staff qualifications and continuing education—on the overall performance of sport-study programs in Morocco. We hypothesize that programs led by highly qualified and regularly trained professionals achieve better outcomes in both academic and athletic domains.

To test this hypothesis, field research was conducted in ten public schools across three Moroccan regions. Using a mixed-methods approach that combines quantitative indicators with qualitative feedback, the study provides diagnostic insights and practical recommendations for improving the effectiveness of sport-study programs in an emerging context.

Methodology

This section outlines the adopted research design, the study field, the data collection tools, and the analytical techniques used to address the research question.

Research Design

This study is based on an analytical quantitative approach, complemented by qualitative elements derived from semi-structured interviews. This mixed-method design was chosen to empirically examine the impact of human resources—specifically, the qualifications and ongoing training of staff—on the overall performance of sport-study programs (both academic and athletic).

The study follows an explanatory framework aimed at testing the hypothesis that programs led by better-trained professionals achieve better results than those supervised by less qualified staff.

Data Collection

The study was conducted across ten pilot sport-study programs implemented in public high schools in three Moroccan regions: Casablanca-Settat, Rabat-Salé-Kénitra, and Tangier-Tetouan-Al Hoceima. Each program (e.g., a football section within a given high school) was considered as a distinct unit of analysis.

Data were collected using two main instruments:

- A standardized questionnaire administered to the head coach or lead supervisor of each program, focusing on their academic background (degrees, certifications), professional experience, and participation in continuing education.
- Semi-structured interviews (approximately 30 minutes each) with six staff members, to gather qualitative insights into coaching practices, encountered challenges, and perceived success factors.

Academic performance data (pass rates, honors, transitions to higher education) and athletic performance data (national team selections, competition records, technical progress) were collected from regional program coordinators and supplemented by databases from national sports federations.

Data Analysis

The analysis proceeded in two complementary phases. A first descriptive phase was conducted to establish the profiles of the staff (qualification, experience, continuing education) and to evaluate program performance using basic statistical tools (means, standard deviations, frequencies), processed with SPSS.

Next, a comparative and correlational analysis was carried out to explore relationships between staff profiles (independent variables) and program performance (dependent variable). Depending on data distribution, t-tests (Student) or Mann-Whitney U tests were applied, along with Pearson correlations to quantify associations. As an exploratory step, a multiple linear regression was performed to assess the combined effect of qualification level and ongoing training on performance scores.

Quantitative results were then cross-referenced with qualitative data from interviews, in order to deepen interpretation and highlight the enablers and barriers affecting the observed sport-study model.

Results

This section first presents the descriptive quantitative results concerning the profiles of staff members and the observed performance of the programs. We then examine the statistical relationships between staff characteristics and program performance. Finally, we discuss these findings within the broader context of the literature and qualitative field feedback.

The objective is to determine whether the empirical data support our hypothesis that better supervision—in terms of qualifications and continuing professional development—leads to better performance in Morocco's sport-study programs, and to explore the underlying mechanisms of this relationship.

Staff Profiles and Program Performance (Descriptive Analysis)

The sample of 10 programs provides an overview of the composition of supervisory teams and the variability in performance outcomes. Half of the coaches (5 out of 10) are highly qualified, holding at least a Bachelor's degree, while the other five do not possess a university degree (they hold only coaching certifications or rely on practical experience).

Furthermore, 6 out of 10 coaches participated in at least one continuing training session during the past year, whereas 4 did not attend any. The average coaching experience across the sample is approximately 9 years. However, a notable difference emerges based on qualification: degree-holding coaches average around 12–13 years of experience, while non-degree coaches average only about 5–6 years.

Figure 1 illustrates these staff profile characteristics:

- Left panel: distribution by academic qualification (50% highly qualified / 50% less qualified);
- Center panel: distribution by recent participation in continuing training (60% Yes / 40% No);
- Right panel: average coaching experience in years for each qualification group (≈12.8 years for highly qualified staff vs. 5.4 years for less qualified staff).

Figure 1 : Profiles of Staff in the Studied Programs

(Left) Distribution of coaches by academic qualification level: half hold a university degree (Bachelor's or higher).

(Center) Distribution by participation in continuing training over the past year: 6 out of 10 coaches attended at least one recent training session.

(Right) Average coaching experience by qualification level: Highly qualified coaches accumulate significantly more years of experience (≈12.8 years on average) than less qualified

ones (≈5.4 years). This gap supports the idea that the most academically educated coaches are often also the most experienced, which may benefit program outcomes.
In terms of program performance, there is considerable heterogeneity in both academic and athletic results among the 10 cases.

Sport performance indices range from approximately 60 (for a program with no significant national-level results yet) to around 95 (for a highly competitive program at the national level).

Similarly, academic performance indices vary from a low of about 60 (poor academic success, with many failures and few honors in the baccalaureate exam) to around 90 (outstanding academic success, with nearly all students graduating with honors).

When combining both dimensions, the overall performance index of the programs ranges from approximately 65 (lowest) to 90 (highest) on a scale of 100.
Figure 2 presents the distribution of programs according to their academic, athletic, and overall performance levels.
It shows that:

- 4 programs (40%) demonstrate high overall performance (index >85);
- Around 2 programs (20%) fall into the intermediate performance range (between 75 and 85);
- 4 programs (40%) exhibit low overall performance (index <75).

This distribution illustrates that only a subset of institutions succeed in excelling in both academic and athletic domains simultaneously, while others struggle either in one area or both.

From a sports-only perspective, 40% of the programs reach a high level of athletic performance, whereas 20% remain underdeveloped in this domain, showing no notable results.

From an academic standpoint, 40% of the programs achieve excellent school results (high success rates), the majority (50%) maintain a moderate, acceptable level, and 1 program (10%) shows serious academic weaknesses.

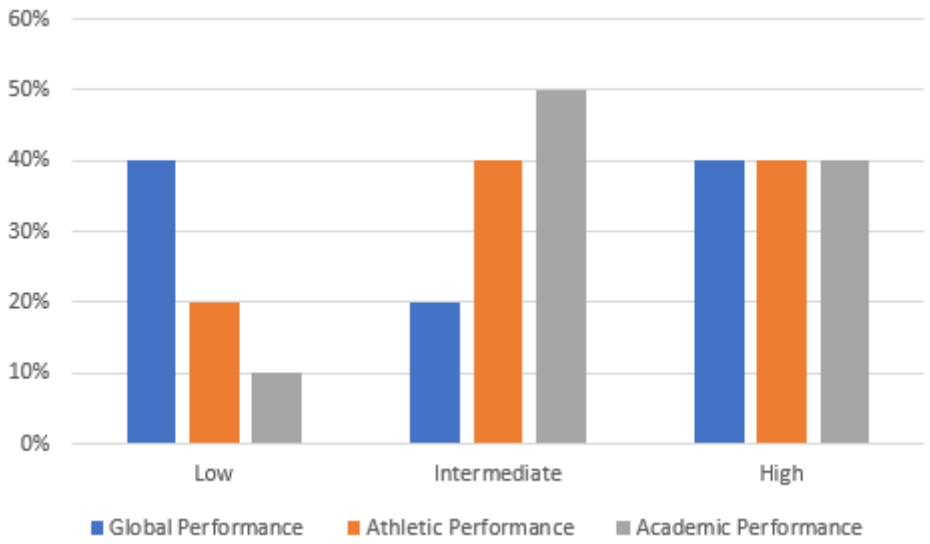

Figure 2: Distribution of Performance Levels Across the 10 Programs (per dimension).

The pie charts show the proportion of programs with high (green), intermediate (orange), or low (red) performance levels.
(Left) Overall performance: 4 programs (40%) have a global performance index >85, 2 programs fall between 75 and 85, and 4 programs score below 75.
(Center) Sport performance: 4 programs are highly competitive athletically, 4 perform at an intermediate level, and 2 lag behind in terms of sports results.
(Right) Academic performance: 4 programs achieve high academic success (≥85% pass rate with strong grades), 5 are in the average range, and 1 program shows very low academic performance (majority of students failed).

Impact of Staff Qualification Level
A key finding of this study is the clear performance gap between programs based on the academic qualification level of their head coach. Programs led by a highly qualified coach (holding at least a Bachelor's degree) show, on average, significantly higher overall performance compared to those led by less qualified coaches.

Figure 3 below illustrates this gap: on average, the overall performance index of the five programs supervised by a degree-holding coach reaches approximately 89.5 out of 100, while the five programs led by coaches without a university degree average only 72.5 out of 100—a difference of about 17 points, which is substantial given the 100-point scale.

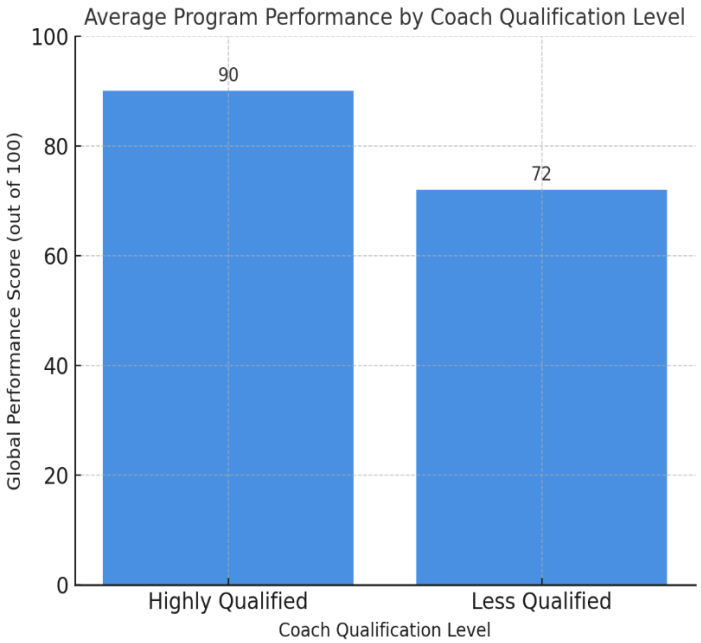

Figure 3: Average performance of programs according to the coach's qualification level

A Student's t-test confirms that this difference is statistically highly significant ($t = 6.23$, $df = 8$, $p < 0.001$), indicating there is less than a 0.1% probability that this difference occurred by chance.

In other words, our data strongly support the idea that the academic qualification of the coach is positively correlated with the success of the program.

The bars represent the average overall performance index (on a 100-point scale) for programs led by a highly qualified coach (Bachelor's degree or higher) versus a less qualified coach (no university degree).

Error bars indicate standard deviations. A performance gap of approximately 17 points is observed in favor of the programs supervised by degree-holding coaches (89.5 vs. 72.5 on average), a difference that is highly statistically significant ($p < 0.001$).

The study reveals that programs led by qualified professionals achieve better outcomes, both academically and athletically. The average academic success rate reaches 88% in these programs, compared to 78% for those supervised by non-graduate coaches. In sports performance, the gap is even more pronounced: an average score of 91/100 versus 68/100. The Pearson correlation between the coach's qualification level and the overall program performance reaches $r \approx 0.91$, indicating a particularly strong association—especially significant within the field of social sciences. These empirical findings confirm the structuring role of academic training in the success of sport-study programs, echoing both the recommendations of the Ministry of Education and the conclusions of Thompson et al. (2022), who emphasize the critical importance of coaching in the success of dual academic and athletic pathways.

Impact of Coaches Continuing Education

The second factor examined-the participation of coaches in recent continuing education-also shows a positive influence on program performance, although somewhat more moderate than the effect of initial academic qualifications.

Figure 4 illustrates this difference: on average, programs whose coaches attended at least one continuing education session in the past year display an overall performance index of approximately 86.4, compared to 72.9 for programs whose coaches did not participate in any training. The gap of about 13.5 points favors programs "coached" by professionals engaged in ongoing development.

A Student's t-test indicates that this difference is statistically significant at the conventional level (t = 2.84, p ≈ 0.021). This result validates the existence of a measurable "continuing education" effect on program success.

Depending on whether the coach has recently completed continuing education (green bar) or not (red bar). A higher average overall index is observed for programs with trained coaches (≈86.4 vs. 72.9). The beneficial effect of continuing education, averaging around +13 points, is statistically significant (p ≈ 0.02).

The correlation coefficient between the binary variable "continuing education (Yes=1 / No=0)" of the coach and the overall index is approximately $r \approx 0.71$, indicating a strong positive relationship (albeit slightly weaker than that observed for the "degree" variable). In other words, all else being equal, when a coach regularly engages in continuing education and updates their skills, it appears to significantly improve the outcomes of their sport-study program.

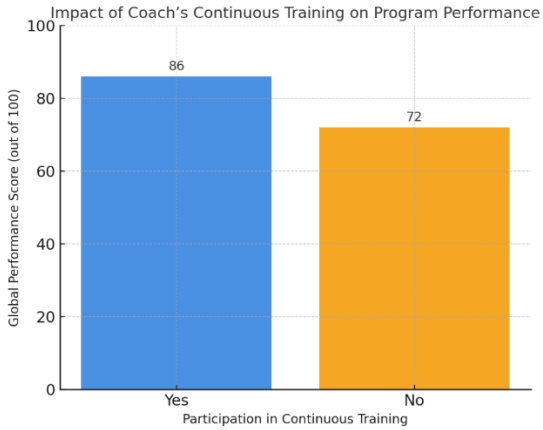

Figure 4 : Average Program Performance Based on Coach's Participation in Continuous Training

This finding aligns with international studies that have shown enhanced athlete performance when coaches participate in ongoing training-for example, through increased athlete motivation or the adoption of new training methods (Rongen et al., 2018).

In our sample, among the six programs where coaches had attended at least one recent training session, five achieved an overall index above 80. Conversely, among the four programs without any continuing education, three scored below 75. This suggests a consistent link: coaches' continuing education is often associated with better program performance.

A comparison between two football programs with similar profiles illustrates the impact of continuing education. In Casablanca B, the coach-holder of a Master's degree in Sports

Science (STAPS) and a participant in a FIFA training course on coaching U17 players-leads a high-performing program: a global index score of 89, approximately 88% academic success, and a gold medal at the national championship. In contrast, in Kénitra, the coach, who lacks both a formal degree and continuing education, manages a less successful program (index score of 75, 78% success rate, and no major titles). This coach acknowledged lacking tools to manage mental preparation and academic stress. Conversely, the coach in Casablanca emphasized the concrete benefits of the training, particularly in academic monitoring and communication with the educational team. These elements confirm that continuing education helps coaches develop a more integrated approach to the dual educational and athletic mission.

Correlations Between HR Factors and Performance

To synthesize the quantitative analysis, Figure 5 presents Pearson correlation coefficients between the main HR variables of the coaches (academic qualification, continuing education, experience) and the performance indicators of the programs (sports, academic, and overall scores). The data clearly show that the academic qualification of the coach is the factor most strongly correlated with performance: for example, $r = 0.91$ with the overall index (as previously mentioned), $r = 0.86$ with sports performance, and $r = 0.83$ with academic performance. Participation in continuing education shows more moderate but still significant correlations ($r \sim 0.54$ to 0.61 depending on the dimension). Coaching experience, measured in years, shows a moderate positive correlation with sports performance ($r \approx 0.59$), but only a weak correlation with academic success ($r \approx 0.40$), resulting in an intermediate correlation with the overall index ($r \approx 0.54$). These quantitative findings confirm that the two main HR levers—initial academic qualification and continuing education—are both associated with better performance among student-athletes, with qualification carrying greater weight. It is also worth noting that experience may not directly impact academic success: some highly experienced coaches without pedagogical training show poor academic results (see Fès), whereas younger coaches with stronger academic backgrounds manage to [2]help most of their students succeed.

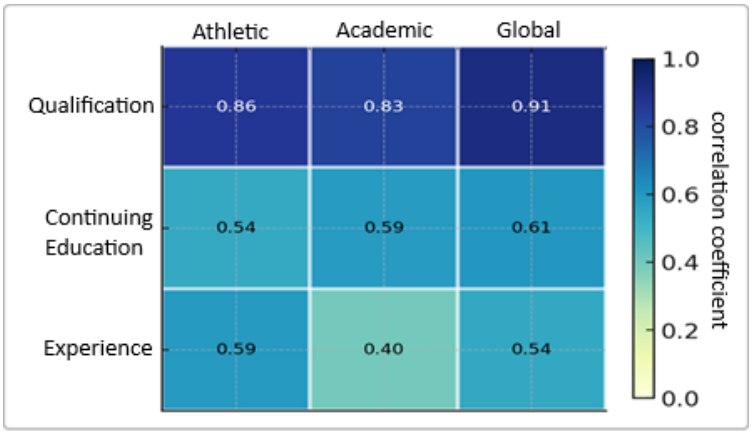

Figure 5: Pearson Correlation Matrix between Coach-Related Variables (Rows: Qualification, Continuing Training, Experience) and Program Performance Indicators (Columns: Athletic, Academic, and Overall Performance).

The numerical coefficients (with darker blue shades representing stronger values) indicate the strength of the linear relationship (N = 10). For example, the value 0.91 in the upper-

right corner means that the correlation between the coach's qualification and the program's overall performance index is approximately r = 0.91 (very strong). It can be observed that academic qualification is the factor most strongly correlated with all three performance dimensions, followed by continuing training. Coaching experience shows a notable positive correlation with athletic performance but a weak correlation with academic achievement.

Discussion

Our empirical findings strongly confirm the critical importance of human resources in the success of sport-study programs. They align with the conclusions of Thompson et al. (2022) and several recent reviews, which emphasize that the success of dual-career pathways depends on multiple situational factors—chief among them the quality of coaching and educational staff involved. Our specific contribution lies in quantifying this effect within the emerging Moroccan context of sport-study tracks, showing that it is not anecdotal but truly decisive.

However, this correlation must be interpreted with nuance. While highly qualified and well-trained coaches often lead more successful programs, a few exceptions in our sample indicate that other factors- such as individual motivation, school environment, or informal pedagogical skills - may also influence program outcomes

How can this observed impact be concretely explained? On one hand, a qualified and well-trained coach is more likely to structure the training program and academic follow-up effectively. For instance, they can plan the sports season while accounting for the academic calendar (e.g., reducing training loads around exam periods, scheduling catch-up sessions after competitions), etc. This echoes the notion of "informed management" highlighted by Rongen et al. (2018), who argue that the challenge is not the concept of sport-study itself but the way it is implemented and managed on a daily basis. In our study, the most qualified coaches often adopted a proactive managerial approach: they maintained grade records for each student, communicated frequently with academic subject teachers, and adapted training sessions individually (e.g., a student struggling in math could be excused from practice to attend a tutoring session).

However, some of these coaches also reported challenges beyond their personal control—such as insufficient infrastructure, lack of coordination with school staff, or limited institutional recognition of their dual role. This suggests that coach effectiveness depends not only on individual competence but also on a supportive system.

These practices are directly reflected in the high academic success rates observed in the corresponding programs. Conversely, less-trained coaches may lack awareness- or knowledge - of pedagogical monitoring tools and may mistakenly view academic matters as outside their responsibility. The study by Harfi & El-Jazouli (2022) had already highlighted this problematic division between the academic and athletic components in Morocco's pilot academies, attributing it in part to a lack of coordination and training among staff. Our results suggest that coaches with a university background are better positioned to bridge this gap and show greater sensitivity to academic aspects.

The analysis also highlights that better-trained coaches bring substantial added value on the athletic front by optimizing performance while safeguarding the health of student-athletes. At the Tanger A site, a coach with a master's degree in sports science implemented a scientifically-based training load monitoring protocol that effectively prevented fatigue and injuries. In contrast, a similar program without qualified supervision experienced two serious injuries mid-season. These findings illustrate how a coach's academic expertise directly influences athletic performance and the sustainability of the athlete's career. Moreover, the results suggest that sport-study programs are not self-sufficient: their success depends on continued investment in staff training. Without this, a program may fall into a vicious cycle of underperformance, disengagement, and erosion of support. On the other hand, strong leadership fosters a virtuous cycle of success and attractiveness. This dynamic, already documented in other international contexts (Stambulova, 2015), underlines the importance of early intervention to prevent structural inequalities from becoming entrenched across schools.

Three key recommendations emerge from this study. First, the qualification level of sport-study coaches must be raised. A bachelor's degree in physical education or sports coaching should be mandatory, and non-graduate coaches should be encouraged to pursue complementary training (e.g., DESJEPS or Moroccan equivalents), in partnership with institutions such as INSEP or local universities. Second, continuing education should become mandatory and recurrent: annual seminars on dual careers, pedagogy, or youth sports psychology would help harmonize practices and professionalize the coaching staff. Third, coordination between educational and sports actors must be strengthened, by formally establishing a tandem between each coach and an academic advisor, as has already been successfully implemented in certain academies. These recommendations are grounded in observed best practices (e.g., Rabat B) and echo the work of Lindner (2002) and Martel (1995), who argue that coherence among stakeholders is essential to optimizing both academic and athletic success.

To operationalize these recommendations, we suggest: (1) setting a national minimum academic requirement for sport-study coaches, ideally a bachelor's degree in physical education or coaching science; (2) launching an annual continuing education seminar on dual-career management, jointly organized by educational and sports authorities; and (3) creating formal academic-sport tandems in each program, where every coach is paired with a dedicated academic advisor to monitor student progress collaboratively.

Finally, from a national sports policy perspective, our results advocate for a real competence management strategy alongside the implementation of the sport-study model in Morocco. Simply creating sport-study tracks and assigning students and coaches is not sufficient: it is essential to ensure that coaches have the necessary competencies and, if not, to provide them through proper training. In a way, the success of sport-study programs could become a catalyst for raising the overall standard of sports coaching in Morocco—if investments are made in coach development. This would have an impact not only on the specific programs but potentially on the entire national sports ecosystem, as many of these coaches also work with clubs outside of school.

In conclusion, our analysis highlights once again that human resource management—especially the qualification and training of coaches—is a critical success factor for sport-study programs in Morocco. Our study supports what many experts had long suspected: "it is by improving the quality of the TIDS (Talent Identification and Development System) that positive outcomes emerge." Applied to the dual sport-study system, this means that it is not the concept itself that needs to be questioned, but rather the human resources deployed to make it work. Investing in the human capital of coaches is likely one of the best guarantees to ensure that the goal of developing both future champions and high school graduates does not turn into an uneven race or a dual failure.

Limitations of the Study and Future Directions

While this study provides valuable insights, certain limitations should be acknowledged. First, the small sample size (10 programs) restricts the generalizability of findings and does not fully capture the diversity of sports disciplines, regions, or socio-economic contexts in Morocco. Second, the analysis focused solely on sports coaches, without considering other key stakeholders such as teachers, families, or pedagogical coordinators. Third, the variable "academic qualification" was treated as binary, without accounting for differences in degree level or field of study. Finally, the study adopted a cross-sectional approach, lacking longitudinal follow-up of student-athletes or performance trajectories over time.

To address these limitations, future research could include a larger and more diverse sample, broaden the scope to other actors, refine explanatory variables, and implement longitudinal designs to better assess the long-term impact of coaching practices on academic and athletic outcomes.

Conclusion

This study confirms that the human resources dimension—particularly the academic qualifications and continuous professional development of coaches—is a decisive factor in the performance of sport-study programs in Morocco. The performance gap observed between well-trained and less-trained staff is not marginal; it translates into measurable academic success and competitive sports achievements. These findings validate the central hypothesis of this research and align with international evidence on the role of coaching in dual-career pathways.

These results support the urgent need for a structured human resource policy within the national sport-study system. In the short term, establishing minimum recruitment standards and mandatory continuous training would raise the baseline quality of supervision. In the medium to long term, institutional frameworks must promote interdisciplinary coordination between coaches, teachers, administrators, and families to ensure personalized monitoring of student-athletes and coherence between academic and athletic goals.

Beyond the Moroccan context, this research highlights the importance of aligning national sport-education policies with international best practices. The Moroccan sport-study model could serve as a reference for integrated athlete development—provided it continues to professionalize its human resources and adopt a systemic, inclusive approach. Future studies should further explore the roles of pedagogical leadership, family engagement, and structural equity in sustaining dual-career programs over time.

Contributions

This research makes a significant contribution to both theoretical and practical knowledge on the management of sports-study programs in Morocco. By adopting a mixed-methods approach, it provides a structured framework to measure the influence of supervisors' academic qualifications and continuous training on program effectiveness. The findings reveal that programs led by academically qualified and continuously trained supervisors achieve performance scores 15 to 20 points higher than others, with strong correlations between human resource factors and both academic and athletic outcomes. These results confirm the central role of human capital in dual academic-athletic pathways and underline the importance of establishing minimum standards for both initial qualifications and ongoing professional development. The study also offers practical recommendations for policymakers and education authorities, emphasizing the need for structured recruitment policies, continuous training opportunities, and stronger coordination between schools and sports institutions. It thus provides both conceptual insights and operational guidance to enhance the sustainability and effectiveness of sport-study programs in emerging contexts.

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