Sports and academic performance: associations contributing to the (un)success of student-athletes

Deporte y rendimiento académico: asociaciones que contribuyen al (des)éxito de los estudiantes-atletas

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Abstract

Introduction: The practice of physical activities, especially sports, plays a crucial role in promoting health and the holistic development of children and adolescents. However, the relationship between participation in sports and academic performance continues to generate controversies, with studies presenting divergent results regarding its positive or negative impact on the academic performance of student-athletes.
Objective: To analyze associations between sports practice and academic performance of student-athletes.
Methodology: A systematic literature review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and was registered in the International Prospective Register of Systematic Reviews (PROSPERO) under the number CRD42023464165. Searches were carried out between August and September 2023 in the electronic databases MedLine (via PubMed), ERIC, LILACS (via BVS), and SciELO.
Results: Of the 3,306 publications found through database searching, 13 studies were considered eligible. The samples varied between 52 and 27,954 students, with an average age ranging from 6 to 19 years, for a total of 41,028 students investigated. It was found that sports, due to their characteristics, could reduce deviant behaviors in the school environment, improving teamwork, and developing greater responsibility, engagement, and commitment among student-athletes.
Conclusions: The studies showed that student-athletes tended to present better academic performance compared to non-sporting students, revealing positive connections between regular sports practice and improved results in the exams to which the student-athletes were subjected.

Keywords

Academic success; school; sports; students; systematic review.

Resumen

Introducción: La práctica de actividades físicas, especialmente el deporte, desempeña un papel crucial en la promoción de la salud y el desarrollo integral de niños y adolescentes. Sin embargo, la relación entre la participación deportiva y el rendimiento académico continúa generando controversia, con estudios que presentan resultados divergentes respecto a su impacto positivo o negativo en el rendimiento académico de los estudiantes-atletas.
Objetivo: Analizar las asociaciones entre la práctica deportiva y el rendimiento académico de los estudiantes-atletas.
Metodología: Se realizó una revisión sistemática de la literatura según los Elementos de Informe Preferidos para Revisiones Sistemáticas y Metaanálisis (PRISMA), registrada en el Registro Prospectivo Internacional de Revisiones Sistemáticas (PROSPERO) con el número CRD42023464165. Las búsquedas se realizaron entre agosto y septiembre de 2023 en las bases de datos electrónicas MedLine (vía PubMed), ERIC, LILACS (vía BVS) y SciELO.
Resultados: De las 3.306 publicaciones encontradas mediante la búsqueda en bases de datos, 13 estudios fueron considerados elegibles. Las muestras variaron entre 52 y 27.954 estudiantes, con una edad promedio de 6 a 19 años, para un total de 41.028 estudiantes investigados. Se encontró que el deporte, debido a sus características, podría reducir las conductas desviadas en el ambiente escolar, mejorando el trabajo en equipo y desarrollando mayor responsabilidad, involucramiento y compromiso entre los estudiantes-atletas.
Conclusiones: Los estudios mostraron que los estudiantes-atletas tendían a presentar un mejor rendimiento académico en comparación con los estudiantes no deportistas, revelando una relación positiva entre la práctica deportiva regular y mejores resultados en los exámenes a los que se sometieron.

Palabras clave

Éxito académico; escuela; deportes; estudiantes; revisión sistemática.

Introduction

Physical inactivity causes harmful effects on health, as it is a risk factor that can lead to numerous physiological detriments, including obesity, cardiovascular diseases, musculoskeletal disorders, and colon and breast cancer (Ahmadi et al., 2022). On the other hand, regular physical activities (PA) of adequate intensity and duration are essential for maintaining a healthy lifestyle and improving physical and mental well-being (Fernhall & Agiovlasitis, 2008; Gunter et al., 2012; Janssen & LeBlanc, 2010).

PA is recognized as an effective non-pharmacological means of moderating mood and depression, potentially reducing anxiety symptoms (Borrega-Mouquinho et al., 2019; Della Corte et al., 2022; Javelle et al., 2020) and regulating psychological health and social development (Biddle & Asare, 2011; Ziereis & Jansen, 2015).

According to the World Health Organization (WHO, 2018), sports are a type of PA, either individual or team-based, that require exercise and physical effort, skills, and motor dexterity, aimed at improving health and maintaining physical condition and balance of physical and psychological fitness. Children and adolescents can engage in various sports during school or as leisure activities to promote joy and satisfaction. Furthermore, it can be stated that high-performance sports are competitive activities intended to surpass opponents while strictly adhering to the rules established by Federations and/or Confederations of each sport (WHO, 2018).

As maintained by Guedes (1999), as crucial as being a factor for the development and enhancement of motor skills, sport is also a means for building citizenship and instilling values and attitudes that can be transferred to other environments and situations beyond sports practice. Simões et al. (1999) argue that sports are a psychosocial and institutional phenomenon determined by the circumstances in which they occur, with family and school being decisive elements in achieving established objectives.

The cognitive and academic development of children and adolescents is a task entrusted to the education and teaching system (Brazil, 1996). In this context, students' academic performance is typically linked to evaluations through knowledge tests and their results in various curricular components, with the most relevant being, on certain occasions: Portuguese Language/Reading, Mathematics, and Sciences (Mahendra & Marin, 2015). For Oliva et al. (2019), academic performance is one of the determining factors for a successful professional and social future. It is considered an important social and occupational predictor for the individual (Serbin et al., 2013; Winding et al., 2013).

As an example, the National System for the Evaluation of Basic Education – Saeb (Brasil, 2025) assesses biannually the quality of education in Brazilian schools and the levels of learning in Portuguese Language and Mathematics of students enrolled in the last year of each level, throughout their five years of early elementary education (1st to 5th grade), four years of late elementary education (6th to 9th grade), three years of traditional high school (1st to 3rd year), and four years of traditional and integrated high school (1st to 4th year).

Bailey et al. (2009) highlight that sports practice can favor better academic performance and contribute to the development of self-esteem, socialization skills, and reduction of deviant behaviors in the school environment. Interventions that implemented sports into the routine of students demonstrated the most positive effects of PA on academic performance and executive functions (inhibitory control, working memory, cognitive flexibility, and planning) (Barbosa et al., 2020; Paiano et al., 2019).

As stated by Haverkamp et al. (2020), chronic interventions improve processing speed, attention, cognitive flexibility, working memory, and language skills. Moreover, specific studies have shown that participation in individual sports can lead to notably higher academic scores (Ishihara et al., 2020; Owen et al., 2024), complementing the teamwork benefits often associated with collective activities (Eldridge et al., 2014; Kang et al., 2024).

The term student-athlete designates an individual who balances the obligations of their educational pursuits with sports participation at various levels (European Commission, 2012). The literature, however, distinguishes different profiles within this category. Research, such as Lima et al. (2025), describes the extracurricular sports participant as one who primarily competes at the school level. In this context, the school acts as an initiator of athletic involvement and a promoter of socioemotional and physical

development, with an emphasis on educational and socialization aspects. Conversely, the high-performance student-athlete is characterized as an individual affiliated with a sports Confederation and/or Federation (Alves Grubertt et al., 2024; Costa et al., 2021; Flach et al., 2023). Their routine demands the reconciliation of academic life with a high-performance competition calendar and daily, systematized sports training. Such training, according to Dasso (2019), consists of planned, structured, and repetitive physical activities that aim to improve one or more components of physical fitness.

In this way, Melo et al. (2020) found that students' dedication to sports competitions and travel makes it challenging to catch up with the school curriculum, considering the lack of mandatory content replacement, whether in person or online, which harms their academic training. Furthermore, the study by Daley and Ryan (2000) did not reveal correlations between PA, such as sports practices, and improved academic performance. Similarly, Yu et al. (2006) showed weak or negative connections between sports practices and academic performance. Likewise, other authors (Aadland et al., 2017; Ahamed et al., 2007; Esteban-Cornejo et al., 2014) also did not find positive associations between PA and academic success.

Given the contrast between the findings in the literature, further research in this area is necessary to provide clarity, as elucidating favorable points between physical activities like sports practices and academic performance could contribute to the planning and implementation of public policies promoting sports in the school context, using sports as a pedagogical ally and a tool for improving the teaching-learning process for children and adolescents.

In this context, we addressed the following questions: (1) What is the nature and extent of the association between sports participation and academic performance in student-athletes? (2) Is sports participation predominantly associated with better, worse, or neutral academic performance in student-athletes? (3) What factors (e.g., type of sport, level of competition, training load, age, gender, or the metrics of academic performance used) may influence or moderate the association between sports participation and academic performance? (4) Are there differences in the association between sports participation and academic performance among high-performance student-athletes compared to those who participate in sports recreationally? Therefore, the aim of this systematic review was to analyze associations between sports practice and academic performance among student-athletes.

Method

Design

This systematic review was conducted following the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021) and registered with the International Prospective Register of Systematic Reviews (PROSPERO) under registration number CRD42023464165. A search was performed for scientific articles published in peer-reviewed journals. The PICO strategy was as follows: Participants: student-athletes from different populations; Interventions: individual and/or team sports activities; Comparisons/Control: assessments of school proficiency tests before, during, and after sports practice; Outcome: the influence of sports on academic performance.

Databases and search strategy

Searches were conducted between August and September 2023 in the following electronic databases: Medical Literature Analysis and Retrieval System Online (MedLine) via PubMed, an international database with a high concentration of research in the health field; Latin American and Caribbean Health Sciences Literature (LILACS) via BVS, an important database in the health field and sociocultural studies in Latin America; Scientific Electronic Library Online (SciELO), which encompasses documents from Latin America; and Educational Resources Information Center (ERIC), a database from the U.S. Department of Education that provides access to educational content and related topics.

The descriptors used were: "sports", "school", "student", "teaching", "learning", "evaluation", and "performance". These terms and their synonyms were combined using the Boolean operators OR (among synonyms) and AND (between terms) to form the search phrase. Reproducible search strategies can be found in Appendix A.

The search was conducted for original articles published between 2013 and 2023 in Portuguese, English, or Spanish. We selected a decade-long time frame as it encompasses more recent and methodologically robust studies, which align with policy implementations that promote extracurricular and/or high-performance sports, along with the adoption of effective strategies for integrating sports practice with education.

Selection criteria for studies

To ensure the reliability of the systematic review, two reviewers independently conducted the searches while screening the titles, abstracts, and keywords from the primary research. In case of discrepancies in including or excluding studies, a third reviewer was consulted. This involved a consensus meeting where the third reviewer presented the assessment, and the other two reviewers presented their arguments for inclusion or exclusion of the study until common ground was reached. The complete reading of the texts of the pre-selected articles aimed to verify whether sports practice among students affected their academic performance.

The inclusion criteria were: a) studies that related sports as an influencing factor on academic performance; b) studies that analyzed sports as a pedagogical ally; c) studies that verified sports as an educational means. The exclusion criteria were: a) studies involving students enrolled in higher education; b) studies addressing injuries during sports classes/training; c) studies solely focused on improving motor skill reproduction techniques.

Assessment of methodological quality of studies

To evaluate the methodological quality of the studies included in this review, both the strengths and weaknesses were assessed using the Assessment Checklist of Downs and Black (1998). This instrument features a checklist with 27 items, which presents validated conditions and reliability for assessing the methodological quality of randomized and non-randomized studies.

The methodological classification was shown as a percentage of the total score obtained from the evaluation relative to the maximum possible points a study can achieve, with a score of ≤ 50% considered low; 51% to 75% regarded as good; and > 75% classified as excellent (Santos et al., 2021; Sarmento et al., 2018). The higher the score, the higher the quality and reliability of the presented study (Ribeiro & Telles, 2023).

Data collection process

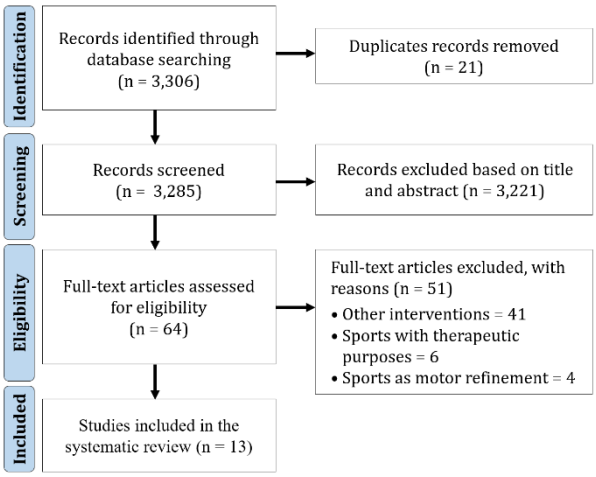
The data extracted from the studies included: country, study design, sample size, age, gender/sex, population, objectives, interventions, instruments, and outcomes.

Results

The search identified 3,306 scientific articles (PubMed, n = 2,269; ERIC, n = 664; LILACS, n = 197; SciELO, n = 176), of which 21 were removed due to duplication. Subsequently, 3,211 articles were excluded based on their titles and abstracts. From these, 64 studies were chosen, and after applying the eligibility criteria, 13 studies were selected for inclusion in this systematic review (Figure 1).

The main characteristics of the studies included in this review are summarized in Table 1. Eight studies (61.54%) were written in English and published between 2013 and 2023 (Bradley et al., 2013; Cerda et al., 2021; Chen et al., 2021; Dumuid et al., 2021; Pinto-Escalona et al., 2022; Polat, 2018; Silva et al., 2019; Zhang et al., 2023), while five studies (38.46%) were written in Portuguese and published between 2015 and 2022 (Maciel et al., 2017; Melo et al., 2022; Peserico et al., 2015; Rizzo et al., 2021; Soares et al., 2015).

Figure 1. Flowchart of the Study Selection Process.



Methodologically, it was identified that most of the studies (76.92%, n = 10) presented a descriptive design, with a quantitative approach (23.08%, n = 3), mixed (7.68%, n = 1), longitudinal (23.08%, n = 3), and cross-sectional (23.08%, n = 3). Two studies (15.40%) utilized a quasi-experimental design (Pinto-Escalona et al., 2022; Silva et al., 2019), while one study (7.68%) employed an exploratory design (Rizzo et al., 2021).

Table 1. Main characteristics of studies

Authors (Year)	Country	Study Design	Sample Size (age in years)	Gender/Sex	Population
Bradley *et al.* (2013)	Ireland	Longitudinal (2008 to 2011)	402 (17 to 18 years) Athletes (n = 228) Non-athletes (n = 174)	F = 0 (0%) M = 402 (100%)	Students from a boys' high school
Peserico *et al.* (2015)	Brazil	Descriptive and Documentary with quantitative and qualitative approaches	59 6 at 13 years (10.2%) 15 at 14 years (25.4%) 21 at 15 years (35.6%) 11 at 16 years (18.6%) 6 at 17 years (10.2%)	F = 28 (47.45%) M = 31 (52.55%)	Students enrolled in the 8th and 9th grades of Elementary School and the 1st, 2nd, and 3rd years of High School, members of the school's sports teams
Soares *et al.* (2015)	Portugal	Descriptive with quantitative approach	831 (15 to 19 years)	F = 490 (59%) M = 341 (41%)	Students from the 10th year (39.8%), 11th year (30.9%), and 12th year (29.3%) of Secondary Education
Maciel et al. (2017)	Brazil	Descriptive with quantitative approach	80 (8 to 13 years)	F = 25 (31.3%) M = 55 (68.8%)	Students from public and private schools
Polat (2018)	Turkey	Longitudinal (2017 to 2018)	80 (12 years)	F = 80 (100%) M = 0 (0%) Gymnasts (n = 40) Non-athletes (n = 40)	Student-athletes ranked among the top 40 athletes who participated in the Turkish National Rhythmic Gymnastics Competition held at different times during the 2018 academic year, and students who did not participate in any sport
Silva et al. (2019)	Brazil	Quasi-experimental	52 (8 to 12 years)	F = 27 (51.9%) M = 25 (48.1%) F (IG) = 11 (40.7%) F (CG) = 16 (59.3%) M (IG) = 15 (60.0%) M (CG) = 10 (40.0%)	Students from the 4th year of Elementary School in a school in the city of Recife/PE, divided into intervention and control groups
Cerda et al. (2021)	Chile	Cross-sectional	2,010 (± 16.67 years)	Not specified	High school students from 13 schools (public, privately subsidized, and fully private) in Central-Southern Chile
Chen et al. (2021)	USA	Cross-sectional (2019)	6,946 (14 to 17 years) 877 at 14 years (12.6%) 2,014 at 15 years (29.0%)	F = 3.662 (52.7%) M = 3.284 (47.3%) Non-athletes (n = 2,812) Participants of one sports team (n = 1,904) Participants of two sports teams (n = 1,292)	Students from 9th to 12th grade in American High School, both athletes and non-athletes in collective sports teams

			2,168 at 16 years (31.2%) 1,887 at 17 years (27.2%)	Participants of three or more sports teams (n = 938)	
Dumuid et al. (2021)	Australia	Longitudinal (2010 to 2013)	370 (6 to 9 years)	PAT Mathematics (n = 303) F = 142 (46.9%) M = 161 (53.1%) PAT Reading (n = 277) F = 135 (48.8%) M = 142 (51.2%) NAPLAN (n = 245) F = 125 (51.0%) M = 120 (49.0%)	Indigenous Australian students and students from the Torres Strait Islands
Rizzo et al. (2021)	Brazil	Qualiquantitative exploratory study	Not specified (15 to 17 years) 10 coaches aged between 24 and 55 years Coaches in athletics (n = 5) Coaches in swimming (n = 5)	Coaches (F = 4; 40%) (M = 6; 60%)	Student-athletes in athletics or swimming, participants in the Youth Games of Mato Grosso do Sul in 2019
Melo et al. (2022)	Brazil	Descriptive with quantitative approach	1,118 (not specified)	F = 474 (42.4%) M = 644 (57.6%)	Student-athletes from Elementary School in 30 distinct public schools in the municipality of Rio de Janeiro, participating in the Olympic Villas and Schools Project
Pinto-Escalona et al. (2022)	Spain	Quasi-experimental	1,126 (17 to 18 years)	F = 570 (50.6%) M = 556 (49.4%) F (IG) = 234 (41.0%) F (CG) = 336 (59.0%) M (IG) = 249 (44.8%) M (CG) = 307 (55.2%)	Students in their final year of High School at the Elite Sports Secondary School, IES Ortega y Gasset, Madrid, Spain
Zhang et al. (2023)	China	Cross-sectional (2021)	27,954 (10 to 14 years)	F = 13,062 (46.7%) M = 14,892 (53.3%)	Students in the 5th and 6th grades of public primary schools in Shenzhen, China

USA = United States of America; F = Female; M = Male; IG = Intervention Group; CG = Control Group; PAT: Progressive Achievement Tests; NAPLAN: National Assessment Program – Literacy and Numeracy.

In the data collection (Table 2), different instruments/techniques were utilized, including the application of structured and semi-structured questionnaires (53.85%, n = 7) and document analysis to verify academic proficiency (46.15%, n = 6). The samples varied between 52 (Silva et al., 2019) and 27,954 (Zhang et al., 2023) students, with an average age ranging from 6 to 19 years, for a total of 41,028 students investigated.

This high sample number expresses good representativeness, with heterogeneous authorships comprising different researchers from various continents. Among the studies, 53.85% (n = 7) originated from the American continent (Cerda et al., 2021; Maciel et al., 2017; Melo et al., 2022; Peserico et al., 2015; Rizzo et al., 2021; Silva et al., 2019; Soares et al., 2015), 30.79% (n = 4) from Europe (Bradley et al., 2013; Pinto-Escalona et al., 2022; Polat, 2018; Soares et al., 2015), 7.68% (n = 1) from Asia (Zhang et al., 2023), and 7.68% (n = 1) from Oceania (Dumuid et al., 2021). This diversity contributes to external validity, allowing the extrapolation of study results to individuals with similar characteristics in different contexts. Thus, the internal and external validity of analyzing the relationship between sports and academic performance is crucial to verify whether interventions involving sports practice can be adopted and yield benefits for academic achievement. Nevertheless, caution is required due to the specific context of each locality.

Table 2. Presentation of objectives, interventions, instruments, and results of the studies

Study	Aim	Interventions	Instruments	Results
Bradley et al. (2013)	To investigate how participation in school sports influences scores to obtain the Leaving	Football Rowing Rugby	Leaving Certificate	The results of the rowing student-athletes over all analyzed years were significantly higher than those of rugby, football, and non-athletes ($p<0.05$). The Leaving Certificate

	Certificate in an Irish boys' secondary school			scores of rugby and football student-athletes were higher than those of non-athletes, but were statistically not significantly different from each other
Peserico et al. (2015)	To analyze the relationship between competitive sports practice and academic performance in a private school in Maringá/PR, which offers competitive sports as an extracurricular activity	Handball Futsal Volleyball Basketball	Consultation of school documents and questionnaires (closed and mixed questions) applied to students and the 12 teachers working with the student-athletes	57 student-athletes (96.61%) passed and two (3.39%) failed. 14 student-athletes (23.73%) reported that physical activity positively interferes with academic performance; 37 (62.51%) reported it interferes both negatively and positively; 3 (5.08%) reported it interferes negatively; and 5 (8.48%) reported no interference. Among the teachers, 2 (16.67%) consider that the activity positively interferes with their students' academic performance; 7 (58.33%) that it interferes both negatively and positively; and 3 (25%) that it interferes negatively
Soares et al. (2015)	To verify the relationship between sports practice and academic success of young people from public and private schools attending secondary education in the Autonomous Region of Madeira (RAM), Portugal in the 2008–2009 academic year	Gymnastics Athletics Aerobics Table Tennis Futsal Badminton Swimming Handball Volleyball Basketball Football	Application of an anonymous and individual questionnaire, characterized essentially by closed questions	The results indicated that the probability of female student-athletes passing is 66.4% and 50.2% for male students. Conversely, the results indicated that the probability of female non-athletes failing is 41.9% and for male non-athletes, it is 45.2%
Maciel et al. (2017)	To analyze the sports and academic involvement from the perspective of student-athletes participating in the Basketball for All Program (PBT), developed at the State University of Santa Catarina (UDESC), in the city of Florianópolis/SC	Basketball	Application of a questionnaire designed to assess the relationship between sports involvement and academic involvement in the perception of student-athletes	The benefits revealed by student-athletes included reduced stress, greater concentration, and commitment to studies. No negative influences were indicated. It was also noted that both parents and coaches demand good academic performance and maintain good communication about the athletic and academic performance of student-athletes
Polat (2018)	To investigate whether sports have a positive impact on the academic life of rhythmic gymnastics student-athletes compared to students who do not participate in any sport in the 7th grade of Elementary School	Rhythmic Gymnastics	Evaluation based on the overall average scores of students at the end of the 2017–2018 school years	Gymnasts showed statistically significantly higher academic performance compared to the non-sporting group ($p<0.05$)
Silva et al. (2019)	To assess the effects of a structured initiation program in combat sports on the psychobiological aspects and academic performance of a school in the city of Recife/PE	Combat Sports	The Academic Achievement Test, consisting of the Writing subtest (assesses the ability to write correctly), Arithmetic subtest (assesses the ability to solve calculations and mathematical problems), and Reading subtest (assesses the ability to read isolated words aloud from context). Additionally, the total score from the subtests	IG showed significant improvement ($p<0.05$) only in the Reading subtest, with an average of 60.38 correct answers. The total score averages of the subtests (92.27) of the CG were significantly higher ($p<0.05$) than those of the IG (86.46)
Cerda et al. (2021)	To analyze the impact of physical activities and self-esteem on academic performance	Physical activities such as sports (extracurricular sports practice) and Physical Education (curricular or in-school activity)	"Survey of Academic Performance, Sports Activity and Physical Education" Questionnaire, consisting of questions about self-perception, school attendance, bad habits, physical skills, and sociodemographic variables	The practice of sports and participation in Physical Education classes positively contribute (0.24 to 0.05%) to academic performance, but as the hours spent on sports increase, the benefits decrease (0.89 to 1%)
Chen et al. (2021)	To evaluate, in a nationally representative sample in the U.S., associations	Participation in one or more team sports	Self-report questionnaire used to assess participation in sports (none, one, two, three or more teams) and	The results showed that compared to students with no participation in sports teams, students participating in one, two, or three or more teams were more likely to

	between students' participation in team sports and academic performance		academic performance (grades: A, B, C, D, E, and F)	report better academic performance: (1 team: odds ratio (OR) = 1.48; two teams: OR = 2.34; three or more teams: OR = 2.72)
Dumuid et al. (2021)	To examine the association between sports participation and academic performance among Aboriginal and Torres Strait Islander students	Sports practices conducted across four years, titled waves (wave 3, wave 4, wave 5, and wave 6)	NAPLAN and PAT. Both tests consist of assessments evaluating students' numeracy and literacy (composite score from reading, writing, spelling, and grammar tests)	In the PAT for Mathematics, students participating in sports across all four waves performed significantly better (110 vs. 103, 105, and 105, p=0.007, p=0.02, and p=0.02, respectively). In NAPLAN, students participating in sports across all four waves performed significantly better than students participating in two phases of numeracy (438 vs. 409, p=0.006)
Rizzo et al. (2021)	To analyze the influence of sports on the academic performance of student-athletes from the Youth Games of Mato Grosso do Sul based on coaches' perceptions	Athletics Swimming	Application of a questionnaire composed of 11 questions (open-ended, closed, multiple-choice/Likert scale)	Results from coaches' perceptions indicated that 20% of student-athletes achieve excellent academic performance, 70% good academic performance, and 10% average academic performance
Melo et al. (2022)	To verify the possible relationship between sports practice and academic performance among students from the Public Network of the Municipality of Rio de Janeiro who participated in the Olympic Villas and Schools Project	Sports practices in 9 Olympic Villas	Evaluation of academic performance assigned throughout the year by classifications: Very good (VG), Good (G), Regular (R), and Intensive reinforcement (IR) through deliberate records in all forth Class Councils, which consisted of school principals, pedagogical coordinators, teachers, and administrative staff.	Regular sports practitioners participating in the OVSP presented an increase in the number of VG grades and a decrease in the number of IR grades in each Class Councils
Pinto-Escalona et al. (2022)	To compare the academic performance of young elite student-athletes ranked and included in the official Spanish national list of elite athletes with a control group consisting of recreational student-athletes and non-athlete students	Individual and simple sports: swimming, cycling, weightlifting, archery, equestrian, triathlon, athletics, canoeing, ice skating, golf, orienteering, skiing, mountaineering, and climbing; Individual and complex sports: badminton, table tennis, tennis, judo, karate, taekwondo, fencing, wrestling, rhythmic gymnastics, and artistic gymnastics; Complex team sports: baseball, basketball, football, volleyball, rowing, rugby, synchronized swimming, hockey, handball, and water polo	Grade Point Average (GPA) obtained by students throughout the last academic year of high school and average grades achieved in the University Entrance Examination (UEE)	Regardless of the sport practiced, elite student-athletes obtained worse academic performance compared to students in the control group
Zhang et al. (2023)	To evaluate sports participation and academic performance in three essential curriculum components of the Chinese school system (Chinese, Mathematics, and English)	Sports practices	Application of a self-reported questionnaire to verify students' frequency in sports participation	Students who practiced sports 1 to 3 times a month, 1 to 2 times a week, or 3 or more times a week compared to students who never practiced sports showed a greater likelihood of obtaining better grades in Chinese (OR = 1.14, 95% CI: 1.07–1.21; OR = 1.17, 95% CI: 1.10–1.26; and OR = 1.31, 95% CI: 1.22–1.40); Mathematics (OR = 1.15, 95% CI: 1.09–1.22; OR = 1.16, 95% CI: 1.09–1.24; and OR = 1.28, 95% CI: 1.20–1.37); and English (OR = 1.14, 95% CI: 1.08–1.21; OR = 1.25, 95% CI: 1.18–1.33; and OR = 1.35, 95% CI: 1.26–1.44)

IG = Intervention Group; CG = Control Group; OR = Odds Ratio; CI = Confidence Interval; NAPLAN = National Assessment Program – Literacy and Numeracy; PAT = Progressive Achievement Tests; OVSP = Olympic Villages and Schools Projec

The original checklist for methodological quality assessment proposed by Downs and Black (1998) was used with some modifications (Table 3). For questions 9 to 12 and 14 to 26, the option "not applicable"

was added (= 0 points). Question 27 was scored as "Yes" (= 1 point, statistical significance achieved), "No" (= 0 points, statistical significance not achieved), or "Not applicable" (= 0 points). Thus, the maximum score achievable in a study is 28 points.

The calculation (Σ) of the final quality index of a study, expressed as a percentage (%), follows the formula: % = (Σ ÷ 28) × 100.

Table 3. Assessment of the methodological quality of the studies included in the review

Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	Σ	%
Bradley et al. (2013)	1	1	1	1	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
Peserico et al. (2015)	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	20	71%
Soares et al. (2015)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
Maciel et al. (2017)	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	20	71%
Polat (2018)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
Silva et al. (2019)	1	1	1	1	2	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	23	82%
Cerda et al. (2021)	1	1	1	1	2	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	23	82%
Chen et al. (2021)	1	1	1	1	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
Dumuid et al. (2021)	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	25	89%
Rizzo et al. (2021)	1	1	1	1	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	20	71%
Melo et al. (2022)	1	1	1	1	2	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
Pinto-Escalona et al. (2022)	1	1	1	1	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	25	89%
Zhang et al. (2023)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	24	86%
																												Mean	82%

Σ = Total score of the study; % = Percentage of the total score of the study.

It was observed that, except for three studies with methodological evaluations rated as "good" (Maciel et al., 2017; Peserico et al., 2015; Rizzo et al., 2021), all other studies were rated as having "excellent" methodological evaluations, resulting in an average also classified as "excellent", indicating high methodological quality of the studies included in this systematic review.

Discussion

Overview of the findings and nuances of the sport-academy relationship

This systematic review analyzed the association between sports practice and its influence on the academic performance of children and adolescents who are student-athletes. According to the results presented, most studies found positive links between individual and/or team sports practices and academic success. However, some interventions, such as those by Silva et al. (2019) and Dumuid et al. (2021), showed improvements only in specific academic domains (e.g., Reading or Mathematics), suggesting that the impact of sports might not be uniform across all subjects or cognitive skills. Furthermore, the study by Peserico et al. (2015) found no significant sports-related interferences on academic performance. Conversely, the experiment by Pinto-Escalona et al. (2022) observed a decline in the grades of student-athletes engaged in sports with high-competitive demands. These nuanced findings highlight the complexity of the relationship, moving beyond a simple positive or negative correlation, and emphasize the need to consider mediating and moderating factors.

The dual-career challenge: implications for academic performance

The factors that described the connections between sports practice and the influence on (un)academic success were identified in the results of the studies and grouped into four categories: a) decline in academic performance; b) family and school; c) sports practices as extracurricular activities; d) physiological changes.

In the context of "decline in academic performance", the study by Pinto-Escalona et al. (2022) demonstrated that participation in sports at the highest competitive level seems to be associated with impaired academic performance, regardless of gender and the type of sport practiced, due to the intense demands of the dual career of student-athletes. This impairment often stems from the successful reconciliation of the routine dedicated to academic training with the impositions of high-performance sports, leading to compromised study time and increased absences. Supporting this analysis, the increase in sports commitments leads student-athletes to show irregularity in their academic journey, either due to less dedication to their learning duties or due to absences resulting from travels and/or competitions (Souza et al., 2023). Such findings critically underscore the structural challenges within current educational and sports systems.

As stated by Rocha et al. (2020; 2021b), it is essential to have effective and efficient public policies that ensure, for instance, the possibility of compensating for missed classes, considering that one of the factors exacerbating student-athletes' difficulties in achieving good academic results is low school attendance, due to the overlap between obligations related to schooling and sports competitions.

Although provided for in Law No. 9,394/1996, the Brazilian Education Guidelines and Bases Law (Brasil, 1996), the requirement for student-athletes' enrollment and retention in school does not impose an obligation on institutions to adopt a differentiated perspective and regard student-athletes as special cases within the educational system.

According to Rocha et al. (2021a), Brazilian legislation presents gaps that hinder the harmonization between the right to education and professionalization in sports. Consequently, schools and clubs tend to base their conduct solely on compliance with existing regulations. This results in a rare development of policies that ensure the necessary support and monitoring for the academic development of student-athletes. Thus, these institutions fail to compensate for the educational losses that can occur during training, which is often conflicted. This situation reveals a critical lacuna in the support infrastructure, where a lack of adaptive policies directly contributes to the academic vulnerability of high-performance student-athletes.

On the other hand, a systematic review by Maciel et al. (2023) revealed that, from the perspective of student-athletes, the benefits of high-performance sports (individual or collective) outweigh the detriments when considering academic performance. This dual journey, which involves balancing academic and athletic commitments, frequently pushes individuals to their physical, psychological, and mental limits. Nevertheless, the perception that the gains outweigh the losses prevails, suggesting that sports participation can, indeed, positively influence the academic trajectory. This contrasting view, in which student-athletes recognize benefits despite facing objective academic challenges, highlights the significant influence of intrinsic motivation, resilience, and the cultivation of transferable skills that may not be fully reflected by grades alone.

Likewise, in the study by Maciel et al. (2017), the results indicated that a greater time dedicated to sports training is associated with an increase in the time that student-athletes dedicate to their studies. This positive relationship suggests that demands in sports may foster greater responsibility regarding academic performance and educational development. Parents and guardians encourage student-athletes to commit to both sports and studies. In addition, coaches demand high effort during training and competitions but typically excuse student-athletes from activities the day before exams whenever necessary or possible. These findings collectively suggest that while the demands are high, a supportive environment (such as that provided by parents and coaches) can transform these challenges into opportunities for developing self-discipline and enhancing time management skills.

Furthermore, Cerda et al. (2021) observed the positive impact of sports practices and self-esteem on academic performance. However, the effect on academic results increased at decreasing rates, meaning

that as dedication to sports activities decreased, academic performance improved. Similarly, the research by Chen et al. (2021) highlighted positive associations between academic performance and participation in team sports. However, as student-athletes increased their hours dedicated to sports, their academic performance decreased. These patterns strongly suggest an optimal threshold for sports participation, beyond which academic benefits may begin to diminish or even reverse. This finding has significant implications for managing training loads and highlights the necessity for tailored approaches to achieve an effective balance between training intensity and academic responsibilities.

Stambulova and Wylleman (2019) argue that the dual academic-sport career will only bring benefits to student-athletes if it includes contributions to current situations and future projections. Otherwise, according to Conceição and Vaz (2020), the lack of support from educational and sports institutions, especially the inflexibility during scheduling conflicts, can negatively affect both the student-athlete and society in general, as the future opportunities for these students in adulthood, in case of failure in their sports careers, would be limited to market insertion and professional positions. This underscores the critical need for integrated dual career support programs that address not only the immediate academic-athletic balance but also long-term career planning and psychological well-being, mitigating the risks of early specialization without fallback options.

The support ecosystem: roles of family, school, and institutions

In the context of family and school, in the intervention conducted by Silva et al. (2019), students participating in a structured initiation program for combat sports showed improvements in their academic performance in Reading, Writing, and Mathematics. However, significant differences were only evidenced in the average scores in Reading.

Similarly, the investigation by Dumuid et al. (2021), which evaluated the results of student-athletes in numeracy (skills for solving mathematical problems) and literacy (practices and experiences related to reading, writing, spelling, and grammar), indicated that better academic performance in numeracy seems to be associated with the continued sports participation of Australian Indigenous students. However, the improvement in literacy revealed through sports practice was not statistically significant. These varied outcomes across specific academic domains (e.g., strong effect on reading, mixed on literacy, strong on numeracy) highlight a potential area for future research. It suggests that the cognitive benefits derived from different types of sports might differentially impact specific academic skills, or that assessment methods used in these studies may not fully capture the holistic academic impact. This specificity requires more targeted pedagogical interventions.

In line with this, in the study by Peserico et al. (2015), it was found that student-athletes improved their academic performance, achieving high school approval rates (96.61%). Nevertheless, despite the data presented being more favorable to the group of student-athletes, there were no significant differences in attributing academic success to sports practices. However, it was established that family support and effective strategies for compensating for lost content, implemented jointly by the management team, teachers, coaches, and the school community, can be decisive for the holistic development of student-athletes.

According to the research by Rizzo et al. (2021), most student-athletes demonstrate good academic performance. This performance is a key element that can be transferred to adult life, contributing to success in cultural, social, and economic spheres. However, for this to occur, family support and encouragement are fundamental. Moreover, interdisciplinary cooperation among school administrators, teachers, and coaches is necessary. This collaboration should promote changes in planning and execution of actions to ensure that student-athletes are able to achieve good academic results while dedicating themselves to competitive training programs. These studies highlight the role of a strong, collaborative support ecosystem. The practical implications suggest the need for integrated academic support programs, mentorship initiatives, and flexible learning pathways developed collaboratively by all stakeholders (including families, schools, and sports organizations) to mitigate the academic risks linked to intense sports participation.

Conversely, the studies by Brustio et al. (2020a; 2020b) caution that the scarcity of cultural, social, economic, and emotional family support, coupled with inadequate support from educational institutions (e.g., lack of tutoring, individualized study plans, career counseling, flexibility in class attendance, and

exam scheduling) within the dynamic of balancing academic pursuits and sports participation, can inhibit the development of personal skills and competencies. Consequently, student-athletes on this path tend to experience feelings of fear, frustration, and anxiety, which can detrimentally affect their mental health and contribute to their withdrawal from sports and/or education.

Based on the results highlighted in the study by Eltink et al. (2024), the family bond has significant consequences in children's school life. This is especially evident regarding learning and interpersonal relationships. The family acts as the child's first educator, influencing not only inherited physical characteristics but also the integral development of the person. This development encompasses cognitive, emotional, cultural, and social aspects. It is within the family context that children learn essential values such as affection, respect, self-esteem, responsibility, and solidarity. These values should be cultivated and enhanced in conjunction with the school. The contrast between the positive impact of strong support and the detrimental effects of its absence underscores the need for preventative measures and comprehensive psycho-pedagogical support systems within schools and sports clubs.

As maintained by Bourdieu (2023), the values and knowledge that an individual internalizes over time derive from incorporated cultural capital. This capital is transmitted through family and educational institutions and includes bodily postures, aesthetic preferences, and intellectual competencies. Objectified cultural capital refers to the possession of material goods that reflect culture legitimized by the dominant class. To achieve this, it is not sufficient to have economic resources; it is also necessary to have a refined taste to appreciate works of art and literature. Furthermore, institutionalized capital is related to obtaining diplomas and educational certificates, conferring social values recognized by prestigious institutions (Bourdieu, 2023).

To illustrate this, Vargas, Rinaldi, and Capraro (2022) observed in the narratives of successful male artistic gymnastics athletes from the Brazilian national team that parental support, especially from families immersed in sports culture, tends to facilitate greater exposure for children and youth to various sports disciplines, and also inspires involvement in their specific sport. Besides, this support plays a role in emotional and financial upkeep, highlighting that disciplines with varying demands require distinct levels of family investment. This reinforces that cultural capital and socioeconomic status are determining factors in opportunities for choices and shaping one's trajectory.

Moreover, Bungenstab et al. (2022) argue that in socialization processes, family legacies serve as resources of privilege and practical support which, when necessary, reduce the material and symbolic obstacles that student-athletes from more privileged backgrounds may face. This fosters a more stable integration of academic development and athletic performance. From a Bourdieusian perspective, student-athletes endowed with economic, social, and cultural capital inherited from their families start from an advantageous position in their academic and sporting trajectories. Fortuitously, they bring with them dispositions, practices, and forms of recognition that align and directly resonate with the expectations, demands, and values of these two fields, which possess their own rules and dynamics of domination.

This critical analysis, informed by Bourdieu's concept of capital, reveals significant inequalities in the dual career path. It highlights that the "success stories" often originate from socioeconomically privileged backgrounds, possessing the necessary economic, social, and cultural capital to navigate the demanding intersection of high-performance sports and academic requirements. Therefore, a key implication is the need for compensatory educational and sports policies that actively reduce material and symbolic obstacles for student-athletes from less favored backgrounds, aiming for greater equity in dual career opportunities.

Thus, understanding the nuances and dynamics present in structures of power and privilege is essential for analyzing society. The way culture and knowledge are transmitted, acquired, and recognized influences both the individual and collective trajectories of individuals. This leads us to (re)think the role of cultural capital in reproducing inequalities and constructing identities. These issues are fundamental to understanding social interactions and the disparities that permeate our reality.

Extracurricular sports practice: behavioral, social and gender impacts

In the context of sports practices as extracurricular activities, research by Melo et al. (2022) revealed a trend of increasing academic performance among student-athletes in the Municipal Education Network

of Rio de Janeiro. These students participated in extracurricular activities under the guidance of the Olympic Villas and Schools Project. The data indicated that the average academic performance of students who engaged in sports at the Olympic Villas was higher than that of those who did not participate in structured sports activities.

According to the studies by Matias (2010; 2020), participation in structured extracurricular activities can promote significant changes in various aspects of development. These activities not only improve academic performance but also enhance behavior and relationships with peers. Additionally, they contribute to an increase in self-esteem, respect, and the internalization of values. These positive impacts can extend into the adult lives of students, contributing to the full exercise of citizenship. These findings support the integration of structured sports programs into the school curriculum or as extracurricular offerings, emphasizing their holistic developmental benefits beyond mere physical activity. Educational policy should thus encourage and fund such initiatives as integral components of student development.

Thus, Bradley et al. (2013) observed that participation of Irish boys in sports as extracurricular activities, such as rowing (an individual activity) and rugby or football (team activities), during their years of study for obtaining the Leaving Certificate, contributed to better academic performance. The results also indicated that participation in individual sports led to higher scores in student-athletes' evaluations.

Similarly, Polat (2018) investigated Turkish girls, rhythmic gymnastics student-athletes, who ranked among the top 40 in the 2018 National Competition. The results showed that these athletes exhibited better academic performance. The author concluded that the inclusion of sports practices as extracurricular activities can positively impact the academic performance of female students. In accordance, the research by Soares et al. (2015) revealed that indicators of academic success are more frequent among girls than boys in Portuguese secondary education. However, no association was found between academic performance and a specific sport. This comparative analysis indicates that both individual and team sports can provide benefits, with some evidence suggesting that individual sports may lead to superior outcomes. The consistent finding of higher academic success indicators among girls across multiple studies calls for further investigation into gender-specific motivational factors and academic strategies.

A recent study by Ramos-Agost et al. (2025) highlights that many student-athletes internalize the belief that “if you want to be a professional football player, you cannot study”, which may hinder the balance between sports and academic performance. Through an intervention based on Rational Emotive Behavioral Therapy (REBT), the authors demonstrated that it is possible to transform these maladaptive beliefs and promote a more positive view regarding the possibility of balancing studies and sports practice. The results reinforce that psychological and institutional support is fundamental for the holistic development and academic and sports success of these young individuals. This specific example of a REBT-based intervention provides a concrete model for psychological support programs, suggesting that addressing student-athletes' self-limiting beliefs is a crucial component of effective dual career development. This points to the need for integrating cognitive behavioral strategies within institutional support frameworks.

Differently from other interventions (Martins et al., 2021; Mascarin et al., 2019), which indicated greater difficulties and inequalities in the dual career of female student-athletes, the studies by Rodrigues et al. (2018) and Soares et al. (2010) revealed that girls, during school periods, dedicate themselves more than boys to the activities assigned to them. These female students are constantly challenging themselves, seeking to learn something new or develop new skills. Often, they engage in these tasks for personal satisfaction, curiosity, or even for entertainment. This dichotomy in findings concerning female student-athletes, where greater dedication is met with greater difficulties, suggests a complex interplay of societal expectations, systemic barriers, and individual coping mechanisms. It underscores a crucial area for developing gender-specific policies aimed at dismantling inequalities while harnessing the intrinsic motivational factors that drive female athletes.

Physiological mechanisms and cognitive optimization

In the context of physiological changes, the research by Zhang et al. (2023) presented evidence of a positive relationship between sports participation and academic performance among 5th and 6th grade student-athletes in public primary schools in Shenzhen, China. The authors associated the improvement

in students' academic performance with average scores in Mathematics, Chinese, and English, highlighting the physiological benefits resulting from continuous practice of coordination exercises and challenging team sports activities.

These findings corroborate previous studies (Bryck et al., 2012; Dumais, 2008; Parihar et al., 2011), which indicated that regular sports practice leads to high oxygen consumption (↑VO_2max), improved blood circulation, and an increase in the number of muscle micro vessels. These conditions promote greater fluidity in oxygen transport to the brain, contributing to quicker reasoning, as well as improving cognitive function and creativity.

Similarly, the research by Bengt et al. (2011), Rose et al. (2017), and Sara (2009) confirmed that the hormones serotonin, dopamine, and norepinephrine, released during participation in sports activities, have prolonged effects on the body and contribute to increased academic performance. These three neurotransmitters are associated with different functions: serotonin regulates mood, sleep, libido, anxiety, appetite, body temperature, and heart rate; dopamine is related to feelings of pleasure, happiness, satisfaction, and motivation; and norepinephrine plays an important role in blood pressure control. Collectively, this body of evidence provides a strong mechanistic explanation for the cognitive benefits of physical activity. From a practical standpoint, this knowledge should inform educational policies advocating sufficient duration and intensity of physical education, and perhaps even structured "brain breaks" involving movement, to leverage these physiological advantages for improved learning outcomes across all subjects, not just for student-athletes.

Strengths and important highlights

As strengths of this systematic review, we highlight relevant data on the various challenges faced by student-athletes, particularly concerning the simultaneous demands of their sports and educational routines. Family support and institutional backing are primordial for successfully reconciling education and sports. Families should encourage student-athletes to persist in their studies and assist in managing their daily time and responsibilities. Additionally, it is essential to provide emotional support to cope with nervousness and fatigue. Creating a welcoming environment that promotes self-care and encourages focus on both careers is also crucial.

Furthermore, it is important for educational institutions to offer resources and support programs, such as academic and psychological guidance. Balancing time dedicated to academic and sports activities, including schedule flexibility for class make-up and assessments, is crucial. This allows student-athletes greater autonomy in organizing their tasks. Such measures contribute to students feeling supported and motivated to overcome imposed barriers. Moreover, they provide experiences that can stimulate self-confidence and self-esteem, factors that are pertinent to development in adulthood.

Besides, the data presented in this review reinforce that the regular practice of physical and sporting activities offers benefits for physical and mental health, such as reducing the risk of chronic diseases, improving bone health, muscle strength, flexibility and balance, and decreasing episodes of depression, anxiety and stress. It also contributes to the release of hormones and neurotransmitters, increasing energy levels, promoting opportunities for social interaction, as well as improving concentration and learning ability.

Limitations and future perspectives

As a limitation of this review, it is important to highlight that the articles analyzed portrayed research investigating student-athletes with varied socioeconomic characteristics, coming from different sports modalities and distinct school segments. This diversity necessitates caution in generalizing the obtained data. Therefore, it is recommended that these aspects be considered in future research to ensure the accuracy and relevance of the conclusions.

Conclusions

Although a direct cause-and-effect relationship cannot be established, this systematic review indicates that participation in sports, both individual and team, significantly influences academic performance, with student-athletes generally achieving higher academic results compared to their non-athlete peers.

This highlights positive correlations between regular sports engagement and improved evaluation scores, where intrinsic motivation may play a crucial role, especially among girls.

Additionally, sports can reduce inappropriate behaviors, enhance teamwork, foster a sense of responsibility, and lead to beneficial physiological changes, such as improved cognitive function, thereby emphasizing its value beyond mere physical development. Conversely, an overload of activities and intense competitive pressure can adversely affect academic performance, primarily due to limited study time and decreased school attendance. Addressing these challenges through effective support strategies is vital for nurturing the academic potential of high-performance student-athletes and preventing societal losses.

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Appendix

Appendix A:

Database	Search Phrase
MedLine (PubMed)	(((((("sport s"[All Fields] OR "sports"[MeSH Terms] OR "sports"[All Fields] OR "sport"[All Fields] OR "sporting"[All Fields]) AND ("educational status"[MeSH Terms] OR ("educational"[All Fields] AND "status"[All Fields]) OR "educational status"[All Fields] OR "schooling"[All Fields] OR "education"[MeSH Terms] OR "education"[All Fields] OR "school s"[All Fields] OR "schooled"[All Fields] OR "schools"[MeSH Terms] OR "schools"[All Fields] OR "school"[All Fields]) AND ("student s"[All Fields] OR "students"[MeSH Terms] OR "students"[All Fields] OR "student"[All Fields] OR "students s"[All Fields]) AND ("education"[MeSH Subheading] OR "education"[All Fields] OR "teaching"[All Fields] OR "teaching"[MeSH Terms] OR "teaches"[All Fields] OR "teach"[All Fields] OR "teachings"[All Fields] OR "teaching s"[All Fields])) OR ("learning"[MeSH Terms] OR "learning"[All Fields] OR "learn"[All Fields] OR "learned"[All Fields] OR "learning s"[All Fields] OR "learnings"[All Fields] OR "learns"[All Fields])) AND ("evaluability"[All Fields] OR "evaluate"[All Fields] OR "evaluated"[All Fields] OR "evaluates"[All Fields] OR "evaluating"[All Fields] OR "evaluation"[All Fields] OR "evaluation s"[All Fields] OR "evaluations"[All Fields] OR "evaluative"[All Fields] OR "evaluatively"[All Fields] OR "evaluatives"[All Fields] OR "evaluator"[All Fields] OR "evaluator s"[All Fields] OR "evaluators"[All Fields])) OR ("perform"[All Fields] OR "performable"[All Fields] OR "performance"[All Fields] OR "performance s"[All Fields] OR "performances"[All Fields] OR "performative"[All Fields] OR "performatively"[All Fields] OR "performatives"[All Fields] OR "performativities"[All Fields] OR "performativity"[All Fields] OR "performed"[All Fields] OR "performer"[All Fields] OR "performer s"[All Fields] OR "performers"[All Fields] OR "performing"[All Fields] OR "performs"[All Fields])) NOT ("review"[Publication Type] OR "review literature as topic"[MeSH Terms] OR "review"[All Fields])
ERIC	((("sports" AND "school" AND "student") AND ("teaching" OR "learning") AND ("evaluation" OR "performance")) NOT ("review"))
LILACS (BVS)	Title, abstract, subject = (sports AND school AND student) AND (teaching OR learning) AND (performance OR evaluation) AND NOT (review)
SciELO	All indexes = *("sports" AND "school" AND "student") AND ("teaching" OR "learning") AND ("performance" OR "evaluation") AND NOT ("review")