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A design-based research study of a kinesthetic intelligence- and adversity quotient-based curriculum for student-athletes' dual careers

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ABSTRACT

Special Sports Classes (SSC) at the high school level face challenges in balancing academic and athletic achievement due to the dual demands placed on student-athletes. This study aims to examine curriculum implementation, kinesthetic intelligence development, and Adversity Quotient (AQ) coaching to propose an integrated curriculum model. A qualitative multisite case study was conducted at SMAN 1 Sewon, MAN 2 Yogyakarta, and SMAS Muhammadiyah 7 Yogyakarta. Participants were selected purposively based on their involvement in SSC implementation, including school principals or program coordinators, teachers, sports coaches, and student-athletes. Data were collected through semi-structured interviews, observations, and document analysis and were analyzed thematically through coding, categorization, and cross-site comparison to identify patterns and contextual differences. The findings reveal an 8.19-point gap in academic scores between SSC and regular students, alongside the absence of a dedicated SSC curriculum. Kinesthetic intelligence development remains predominantly practice-oriented, while AQ coaching emerges informally through spiritual traditions and competitive pressures. Based on these findings, this study proposes a conceptual model of the Kinesthetic-Adversity Quotient (KK-AQ) curriculum, grounded in embodied cognition and the CO2RE framework. The proposed model suggests the potential to integrate academic learning, kinesthetic development, and adversity resilience within a coherent curriculum. This study contributes a conceptual foundation for curriculum development aimed at supporting student-athletes in pursuing athletic excellence while strengthening their academic resilience.



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Introduction

The implementation of Special Sports Classes (SSC) at the high school level in various developing countries is rapidly developing as an effort to foster motor talent and develop young athletes systematically (Bassey & Chinonso Ochor, 2024; Retnaningsih, 2023; Santoso, 2020). Today's changing direction in the global sports curriculum is driving the need for a learning environment that not only trains physical skills and strategy, but also incorporates mental resilience, emotional readiness, and deep understanding of the body (Bailey, 2006; Thompson & others, 2022). In a number of Asian countries, such as South Korea and China, sports-focused schools prioritize their curricula on the development of competitive disciplines as well as mastery of techniques

from an early age (Jiang et al., 2024; Kim & Cruz, 2016; Simon et al., 2021; P. Yin et al., 2024). Meanwhile, European countries as well as Australia have implemented dual career systems that provide students with the opportunity to maintain a balance between their sporting achievements and academic achievements (Aquilina & Henry, 2020; Fraser-Thomas et al., 2008; Guidotti et al., 2022)

In Indonesia, the framework for developing sports talent in educational institutions is officially established through the Regulation of the Minister of Youth and Sports Number 11 of 2024 and the Governor of Yogyakarta Regulation Number 5 of 2024 concerning Centers for Excellence Sports Development in the Region (Kementerian Pemuda dan Olahraga Republik Indonesia, 2024; Pemerintah Daerah Daerah Istimewa Yogyakarta, 2024). Despite the existence of supportive regulations, the implementation of the SSC curriculum in the field still experiences fundamental challenges. The design of the SSC curriculum generally still follows the learning load that applies in ordinary classrooms without sufficient adjustments for academic flexibility. Saryono (2021) emphasized that the SSC curriculum that is currently being implemented still prioritizes technical and physical training and has not combined psychological elements such as mental resilience (adversity quotient) to handle the pressure faced both at school and in the field of competition.

Etymologically, the term curriculum comes from the Latin word *currere* which means "distance to be traveled" in the context of a match. In the education sector, the meaning of the curriculum has evolved from a mere list of subjects and formal learning planning documents to a series of learning experiences that students experience under the supervision of educational institutions. These experiences include planned activities (formal curriculum) and unplanned interactions (hidden curriculum), as well as extracurricular activities that contribute to student growth (Hamalik, 2017; Sukmadinata, 2022). Hilda Taba (1962) provides an overview of the curriculum as a learning design that determines the type, order, and scope of the material taught. Experts emphasized that the curriculum has a flexible character and must be updated regularly to keep it in line with the needs of science and community development.

In its evolution, the curriculum is interpreted as a comprehensive educational guide that combines various subjects, teaching approaches, learning aids, and procedures for continuous evaluation. Experts such as Lewy, Lewis & Miel, and Pratt attribute curriculum efficiency to active student involvement and the extent to which the plan set corresponds to a real learning experience in the classroom (Lewis & Miel, 1981; Lewy, 1977; Pratt, 1980). In Indonesia, Article 1 Paragraph 19 of Law No. 20 of 2003 emphasizes that the curriculum is a reference for learning activities in order to achieve national education goals. The development process is based on the principles of flexibility, sustainability, relevance, and differentiation (Republik Indonesia, 2003). Specifically for Special Sports Classes, the curriculum is designed adaptively to combine formal academic goals with the development of kinesthetic intelligence and the improvement of Adversity Quotient (AQ).

Kinesthetic intelligence is one of the elements of Multiple Intelligences which includes the ability to make good use of the body in expressing ideas, solving challenges, and managing objects. According to Gardner (2011) this type of intelligence includes movement coordination, physical readiness, body control, balance, as well as sensorimotor responses that focus on the cerebral areas of the brain and motor cortex. In the world of physical education and sports, kinesthetic intelligence serves as an important basis for mastering skill techniques, motor agility, and mental imagery about movement as a whole.

Learning that prioritizes movement and direct experience has been proven to be effective in improving students' fitness, motivation, and cognitive understanding. Physical activity serves as a tool to explore and build a way of thinking. In the context of the Special Classes of Sports curriculum, motion intelligence is placed as the main basis in teaching. Through authentic training modules, problem-focused activities, and structured assessments, students are given the opportunity to express their potential, develop creativity in movement, and maximize athletic performance on an ongoing basis.

The Adversity Resilience Index (AQ) created by Paul G. Stoltz (2005) serves as a measure of a person's mental resilience in managing, facing, and overcoming various life challenges. Stoltz compiled four main aspects of AQ known by the acronym CORE: Control (regulating emotions in the face of stress), Origin-Ownership (taking responsibility for mistakes), reach (reducing the impact of failure), and endurance (long-term physical and mental endurance). In the context of sports education, AQ has an important role to play in assisting student-athletes in dealing with academic stress, avoiding the risk of fatigue, dealing with injuries, and responding to unpredictable competition results, while transforming existing challenges into opportunities to develop more adaptive character.

The study of a curriculum that focuses on kinesthetic intelligence and Adversity Quotient (AQ) requires a pluralistic basis, placing the body, action, and individual experiences at the core of the analysis. This foundation combines the pragmatic thinking of John Dewey (1916) which highlights the importance of experiential learning and critical reflection, with a theory of embodied cognition that emphasizes the role of the body and

sensorimotor responses in shaping thoughts, strategies, and emotional regulation. With this approach, sports activities not only serve to hone movement skills, but also to instill a strong attitude of resistance.

In addition to pragmatism and cognition being realized, this philosophical framework is strengthened by phenomenology that aims to understand students' life experiences when facing challenges, social constructivism from Vygotsky (1978) which highlights the importance of the support role of the trainer, as well as the critical pedagogy of Paulo Freire (1993) which focuses on cultivating reflective characters. The combination of these philosophies provides a conceptual basis that strengthens that kinesthetic movement learning and mental development of AQ are a harmonious unit. The curriculum not only educates physically, but also builds students' awareness, mental resilience, and independence in a relevant context.

The incorporation of kinesthetic intelligence and Adversity Quotient (AQ) in the Sports Special Class (SSC) program is a strategic approach to developing a comprehensive training system for young athletes. Kinesthetic intelligence supports the mastery of motor skills, body control, and physical reactions. On the other hand, AQ provides the necessary mental support for students to survive the pressures of a rigorous training schedule, fatigue, and competitive challenges. Without the mental resilience gained from AQ, students' kinesthetic abilities will not reach their full potential.

In practice, the merger of KK-AQ is carried out through varied and problem-solving-based learning methods. Teachers and coaches create structured match simulations to provide physical challenges while training students' management of emotions, responsibilities, and fighting spirit. The assessment is carried out in a balanced manner between the assessment of psychomotor ability and the measurement of mental aspects. The combination of these two elements in the SSC curriculum documents and implementation has been proven to produce athletes who excel physically, mature in science, and resilient in the face of various difficulties.

The formulation of the problem in the research : 1) how is the current implementation of the SSC curriculum? 2) how is the process of developing kinesthetic intelligence?, 3) how is the Adversity Quotient (AQ) coaching of athlete students?, 4) how to construct an integrated SSC curriculum?. Research Objectives: 1) analyze the implementation of the current SSC curriculum, 2) analyze the process of developing kinesthetic intelligence, 3) analyze the Adversity Quotient (AQ) coaching of athlete students, 4) construct an integrated SSC curriculum. The benefits of research or development are divided, namely theoretical benefits and practical benefits. Theoretical benefits: contribute to the development of the theory of the curriculum of sports-specific classes by presenting integratives that combine kinesthetic intelligence and Adversity Quotient, enriching academic studies related to the education of adolescent athletes, especially in the context of learning that emphasizes motor aspects and psychological resilience, becoming a scientific reference for future researchers in the field of sports-specific class curriculum, athlete coaching, and educational psychology.

Practical benefits: for schools to provide a sports-specific classroom curriculum that can be applied to improve the quality of learning and development of young athletes at SSC. For teachers and coaches: provide pedagogical guidelines to teach kinesthetic skills in a more structured manner and at the same time build students' mental toughness. For local governments and policy makers: it becomes the basis for formulating policies for the development of sports schools based on local needs and modern education theory. For SSC students; providing a more comprehensive learning experience, not only strengthening physical skills but also the ability to cope with competitive challenges and pressures.

This study employs a qualitative approach with a multi-site case study design to examine curriculum implementation, compare instructional and coaching practices across schools, and identify the contextual factors influencing the delivery of the KSS (sports-integrated curriculum) program. This approach was selected for its capacity to provide an in-depth understanding of participants' experiences, institutional practices, and the complexities of the educational context aspects that cannot be adequately captured through descriptive policy analysis alone. Furthermore, the study outlines the criteria for selecting research sites and participants utilizing strategies such as purposive sampling—to ensure the relevance of the data sources to the research questions. Consequently, this research goes beyond merely describing KSS policies and practices; it analyzes implementation gaps based on empirical evidence from various sites and proposes a conceptual framework for developing an integrated curriculum designed to support the academic achievement, kinesthetic abilities, and resilience of student-athletes.

Method

This study employed a qualitative approach using a multisite case study design (R. K. Yin, 2018) to explore the dynamics of curriculum implementation and development in Special Sports Classes (SSC) across three institutional contexts in Yogyakarta, Indonesia. The research sites were SMAN 1 Sewon Bantul, representing a

public high school with a regional sports orientation; MAN 2 Yogyakarta, representing an Islamic senior high school with sports achievements; and SMAS Muhammadiyah 7 Yogyakarta, representing a private Islamic school emphasizing both religious education and sports. The study was conducted from December 2025 to June 2026. Participants were recruited through purposive sampling based on their roles, experiences, and involvement in SSC curriculum implementation. The 30 participants comprised three school principals, three vice principals for curriculum, three SSC program coordinators, six general subject teachers, six sports coaches, and nine SSC student-athletes. These participant groups provided complementary perspectives on curriculum policy, instructional practices, sports training, student learning experiences, and academic and athletic achievement.

Data were collected through semi-structured in-depth interviews, moderate participant observation during classroom learning and sports training activities, and document analysis. The researcher served as the primary research instrument. The interview protocol was organized around four principal domains: (1) SSC curriculum planning and implementation; (2) the integration of academic learning and sports training; (3) the development of kinesthetic intelligence and Adversity Quotient (AQ); and (4) institutional challenges and opportunities for integrated curriculum development. Core questions explored participants' roles in curriculum implementation, the alignment of academic schedules with sports training, strategies for developing students' physical and cognitive capabilities, practices for fostering resilience when facing academic and athletic difficulties, and perceived barriers to curriculum integration. Follow-up questions were used to clarify responses, obtain concrete examples, and explore differences between participants' experiences. The complete interview protocol, including the core questions and follow-up prompts, should be provided in an appendix. Observations focused on classroom instruction, sports training, interactions between teachers and student-athletes, time-management practices, and situations in which students encountered academic or athletic challenges. Documentary data included school operational curricula (Kurikulum Operasional Satuan Pendidikan, KOSP), teaching modules, and academic score recapitulations. Interview, observation, and documentary data were compared to identify convergent evidence and discrepancies across sources.

Data analysis followed a case study procedure informed by Yin (2009), comprising data organization, coding and categorization, within-case analysis, and cross-case analysis. The initial coding framework was informed by the study objectives and included four analytical domains: curriculum implementation, academic-athletic integration, kinesthetic intelligence development, and AQ coaching. Additional inductive codes were developed when recurring patterns emerged from the data. For example, statements describing conflicts between classroom schedules and training sessions could be coded as "academic-athletic scheduling conflicts," while accounts of students persisting after disappointing competition results could be coded as "resilience under competitive pressure." Codes were grouped into categories and subsequently synthesized into themes within each case. The three cases were then compared to identify shared patterns, contextual differences, and explanatory relationships relevant to the development of an integrated SSC curriculum. The resulting synthesis informed the formulation of a conceptual curriculum model connecting academic learning, kinesthetic development, and adversity resilience.

To enhance trustworthiness, the study employed source triangulation, methodological triangulation, and member checking. Source triangulation involved comparing accounts from school leaders, curriculum coordinators, teachers, coaches, and student-athletes. Methodological triangulation involved examining whether interview findings were consistent with observations and documentary evidence. Member checking was intended to verify the accuracy of participant accounts and the researchers' interpretations. This procedure should be reported by specifying when participants were invited to review interview summaries or preliminary interpretations, how participants were selected for verification, how many were invited and responded, and how their feedback informed the final analysis. Feedback that identified factual inaccuracies or interpretations inconsistent with participants' accounts should be reviewed and incorporated where justified, while divergent perspectives should be retained when supported by the evidence. The analytical process should also be documented through a coding framework containing code definitions, inclusion and exclusion criteria, and illustrative data excerpts. If multiple analysts participated in coding, their independent coding procedures and an appropriate inter-coder reliability coefficient, such as Cohen's kappa where applicable, should be reported. If coding was conducted by a single researcher, this should be stated explicitly, and the study should describe the alternative procedures actually used to strengthen analytical transparency and credibility. The methodological sequence comprised site and participant selection, data collection, data organization and coding, within-case analysis, cross-case comparison, trustworthiness procedures, and conceptual model development.

Results and Discussions

Based on the analysis, three key descriptive findings can be presented: an analysis of the construction needs for the SSC curriculum, the results of curriculum-related interviews, and the formulation of an integration between kinesthetic intelligence and adversity quotient.

Analysis of the Construction Needs of the SSC Curriculum

In the word search with *Dimension*, in the last 5 years (2020-2026), the words "curriculum and pedagogy" and "Sports Science and Exercise" (14/6/2026) totaled 1,053,988, articles: 874,966 pieces.

Table 1. Keyword search

Article Keywords : Title and Abstract	Amount Based title and abstrak
<i>Kelas Khusus Olahraga (KKO)</i>	4
Special Sports Classes (SSC)	203
<i>Kecerdasan Kinestetik</i>	23
Kinesthetic Intelligence	251
Adversity Quotient	377
SSC+ Kinesthetic Intelligence+ Adversity Quotient	0

Based on Table 1, keyword searches in the title and abstract of the article show that the topic of *Adversity Quotient* is the most commonly found keyword, which is as many as 377 articles. Furthermore, the keyword *Kinesthetic Intelligence* was found in 251 articles, while *Special Sports Classes* (SSC) appeared in 203 articles. On the other hand, the keyword in Indonesian, namely kinesthetic intelligence, was only found in 23 articles, and *Kelas Khusus Olahraga (KKO)* as many as 4 articles. Interestingly, the combination of the keywords SSC + *Kinesthetic Intelligence* + *Adversity Quotient* did not result in any article findings at all (0 articles). This shows that research integrating these three concepts is still very limited and has a great opportunity to be developed as a new research topic in the future.

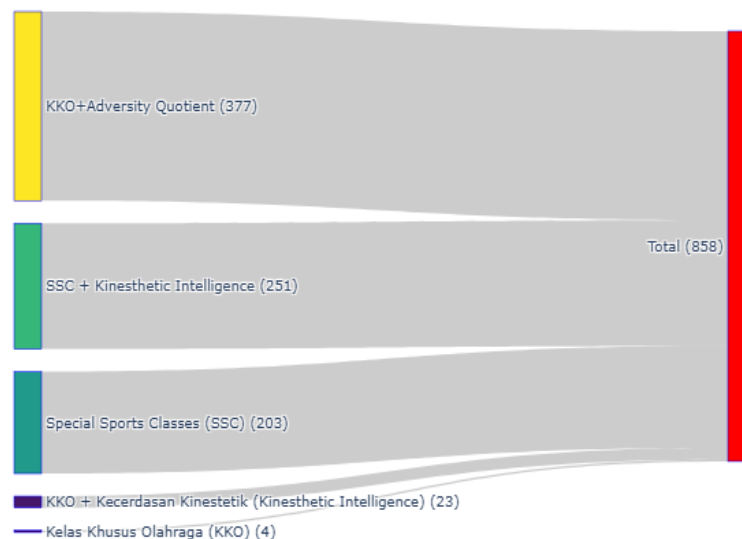


Figure 1. Sankey chart of number of articles by keyword

Tabel 2. Comparison NSAS jalur SSC and Regular

Nama	NSAS SSC	Reguler	Rerata dan Gap Rata/Sekolah	Gap	Rerata/	Kab/kota
SMAN 4 Yk	60.14	71.28	65.71	11.14	65.71	Kota Yogyakarta
SMAN 1 Pengasih	56.57	67.14	61.86	10.57	60.02	Kulon Progo
SMAN 1 Lendah	54.85	61.51	58.18	6.66		
SMAN 1 Sewon	58.78	72.42	65.60	13.64	60.11	Bantul
SMAN 1 Pundong	55.17	66.54	60.86	11.37		
SMAN 1 Dlinggo	53.72	54.01	53.87	0.29		
SMAN 2 Playen	55.15	61.74	58.45	6.59	54.96	Gunung Kidul
SMAN 1 Tanjungsari	52.06	50.89	51.48	-1.17		
SMAN 2 Ngaglik	59.49	72.93	66.21	13.44	63.47	Sleman

Nama	NSAS SSC	Reguler	Rerata dan Gap Rata/Sekolah	Rerata/ Gap	Kab/kota
SMAN 1 Seyegan	56.03	65.41	60.72	9.38	
Rerata	56.20	64.39	60.29	8.19	

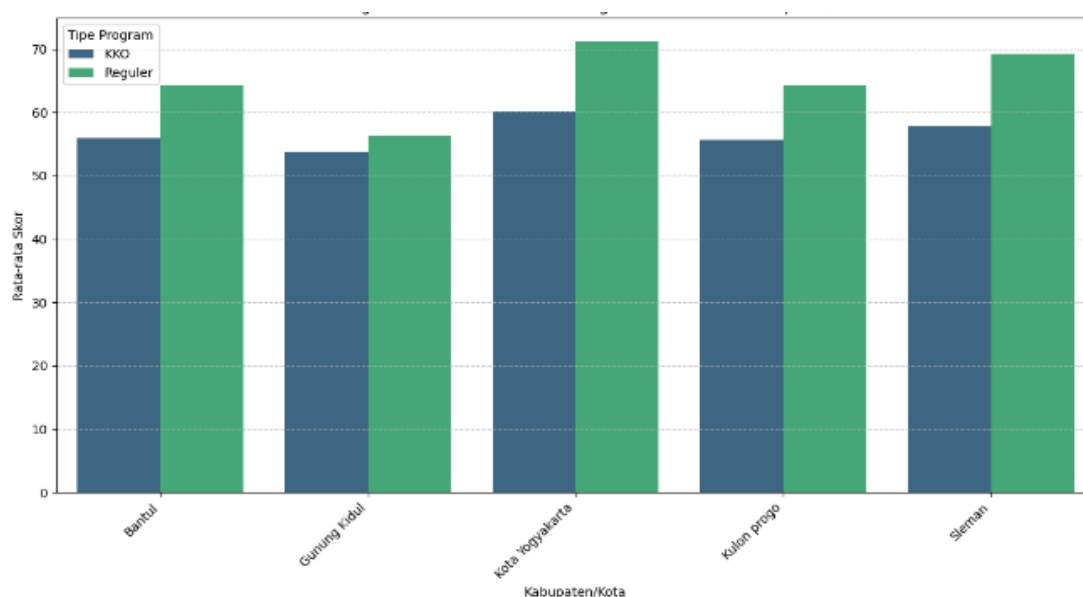


Figure 3. Average NSAS score per city district

Figure 3 of the bar chart shows that the average score of regular students is higher than that of Special Sports Classes (SSC) in all districts or cities in Yogyakarta. Yogyakarta City has the highest average in both programs, while Gunung Kidul has the lowest. The largest score gap was seen in Sleman and Yogyakarta City. These findings indicate the need to strengthen the SSC curriculum so that the academic achievement of student athletes is more optimal without reducing sports coaching.

At the summative end of semester (SES) class X and learning outcome assessment (LOA) class XI which was held on June 3-10, 2024 at SMAN 1 Pengasih, one of the organizers of the special sports class, showed that classes X1 and XIMIPA1 are SSC classes, the rest are regular classes (Table 3).

Table 3. Results of SES class X and LOA class XI

Classes	1 / MIPA 1	2/MIPA 2	3/MIPA 3	4/ MIPA 4	5/ IPS 1	6/ IPS 2
X	62.76	67.68	67.50	69.01	69.07	68.84
XI	63.41	76.77	75.46	76.64	72.05	72.35
	63.09	72.22	71.48	72.83	70.56	70.59
Rata-Rata	63.09	71.54				

Table 3 shows that the average results of SES and LOA in the SSC class with an average score of 63.09 and a regular average score of 71.54. The average academic score of SSC is lower than that of regular classes. Based on the findings of Mulyadi et al. (2025) (2025) development and academic services in Special Sports Classes (SSC) are built through learning flexibility, teacher-coach collaboration, and the cultivation of discipline, responsibility, and time management as the foundation of the athlete-student mentality. The results of interviews with the mathematics teacher (Tri Wahyuni), volleyball coach (Jumono), physical education teacher of sports and health as well as the person in charge of the special sports class of SMAN 1 Pengasih (Sunarti) on June 17, 2025 showed: (1) academic service support has not been optimal; (2) services must be distinguished between regular, SSC and Inclusion; (3) There are no special programs, remote house constraints, there is a SSC-friendly schedule; (4) there are those who get permission early because the house is far away, it cannot be equated with regular; (5) it takes patience, the opponent has more value, it needs to organize the heart to nurture SSC students; (6) outstanding students are given good grades, discipline training, and mentoring are optimized; (7) there is support, motivation, to achieve; (8) the interaction of teachers and coaches with students to establish communication, provide support, and solve athletes' problems; (9) the curriculum is differentiated between regular and SSC; (10) given a different target, learning model; (11) Practice diligently, improve discipline and a solid support team.

Matrix of SSC Curriculum Interview Results

The results of the interviews of the three principals, namely SMAN 1 Sewon, MAN 2 Yogyakarta and SMA Muhammadiyah 7 Yogyakarta which are summarized in Table 4.

Table 4. Matrix of Interview Results and *Cross-Case* of the SSC Curriculum

Aspects of the study	SMAN 1 Sewon	MAN 2 Yogyakarta	SMA Muh 7 Yogyakarta
Background and Motivation for Establishment	Established in 2011 to facilitate and direct the talents and potential of students in the field of sports in a structured manner	Established in 2018 with the approval of the Regional Office of the Ministry of Religion of Yogyakarta to accommodate the interests and achievements of madrasah athletes	Established in 2010 triggered by the performance of 1st Champion Futsal XL (2008) which won a lab grant and funds of Rp50 million
Curriculum Structure & Innovation	Implementing the Independent Curriculum with a Deep Learning approach; the SSC curriculum is still the same as the regular	National curriculum plus innovation Love Curriculum & local content Massage (Sports Injury Therapy)	Customized national curriculum; Facilitate online learning & assignments as athletes compete.
The Development of Kinesthetic Intelligence	Presenting certified coaches, min. 2x weekly training, and sparring partners up to Division I & II clubs	Professional coaches, integration of health care workers with sports science, as well as data collection of club training outside schools.	Insertion of physical movements and interactive ice breaking in almost all theory subjects in the SSC class
Pembinaan Adversity Quotient (AQ)	Through athlete character building programs to forge discipline and mental endurance	Periodic competition programs to test athletes' fighting mentality, as well as the awarding of appreciation/prizes	Islamic spiritual approach (Dhuha prayer, Qur'an), mental cultivation of ready to win/lose, & tawakal.
Facilities, Infrastructure & Financing	Fully equipped facilities: indoor hall, mini soccer court, and outdoor volleyball court; parental financial support.	School Sports Building, trainer honorarium, and outdoor facilities rental (swimming pool & archery)	Volleyball, badminton, and soccer courts; Financing through cross-subsidies & third-party partnerships
Curriculum Solutions & Formulation	Requires flexible curriculum reconstruction (block schedules), pedagogical differentiation, and planned AQ habituation	Requires flexibility in training time, special SSC reports, and strengthening of athletes' connected learning modules	Requires synchronization of match times, online assignments, and strengthening Islamic values.

In Table 4, the analysis of the aspects of the study is: 1) Local Initiative vs Regulation: The establishment of SSC in the three schools is driven by the motivation to respond to the potential and achievements of athletes, but runs under the auspices of different regulations and institutional governance (State Dikpora, Ministry of Religion, & Private); 2) There is no SSC Special Curriculum yet: The SSC curriculum does not have an independent structure and is still the parent of the regular curriculum, triggering a gap in academic grades due to the double physical and academic burden of student athletes; 3) Field Dominant Orientation: Kinesthetic improvement is still focused on the physical/practical aspects on the field/club; The integration of kinesthetic intelligence in cognitive/theoretical classroom learning is still very limited; 4) Natural & Non-Formal Coaching: AQ coaching runs naturally via competitive pressure and has not been written in the official teaching module (OTM), but is effectively fostered through habituation of character and spirituality; 5) Reliance on Supporting Schemes: The success of the SSC program is largely determined by the adequacy of infrastructure and financing flexibility (parental fees, school budgets, cross-subsidies, or third-party partnerships).

The synthesis of findings is a Curricular Gap: The three schools face the same problem, namely the lack of an integrated SSC special curriculum from the government, so that the regular academic load hits the physical training schedule of athletes. Local Creativity: The school conducts independent innovations to cover these limitations, such as local content Massage at MAN 2 Yogyakarta, ice breaking movement at SMA Muhammadiyah 7 Yogyakarta, and *character building training* at SMAN 1 Sewon. Need for Reconstruction: Construction of the KK-AQ Integrative Curriculum is needed which includes schedule flexibility (block/blended system), differentiation pedagogy (movement projects), and planned *habituation of Adversity Quotient* so that athletes excel on the field without sacrificing their academic achievements and spiritual character.

Formulation of Integration of Kinesthetic Intelligence and Adversity Quotient

The development of kinesthetic intelligence in SSC focuses on mastering fine and gross motor coordination, tactical movement efficiency, kinesthetic awareness, and sensory response speed. However, great kinesthetic potential will not result in sustained achievement without the support of a strong *Adversity Quotient*. In this case, the study incorporates the CO2RE framework introduced by Stoltz in the experience of kinesthetic movement. The processing matrix of the two variables can be seen in Table 5.

Table 5. Matrix of integration of kinesthetic intelligence and *adversity quotient* indicators in SSC learning

Main Dimensions	Key Indicators	Forms of Curriculum Integration & SSC Learning Scenarios
Kinesthetic Intelligence	Coordination & Body Control	Automation of basic sports techniques, biomechanics of movement efficiency, and regulation of physical energy during competitions.
	Motor Sensor Response	Speed of reading the direction of the ball/opponent's movement and precise motion decision-making in seconds.
	Creativity & Motion Modification	Ability to create variations in attack or defense patterns when the main tactic is successfully read by the opponent.
	Control	Train students to control emotions, focus, and rhythm of breath when experiencing fatigue or point pressure from opponents.
	Origin & Ownership	Encourage analytical awareness of personal technical/tactical errors without blaming the other party or the referee.
<i>Adversity Quotient</i> (AQ)	Reach	Limiting the psychological impact of defeat in the field so as not to damage academic learning motivation in the classroom.
	Endurance	Build mental endurance (climber attitude) to consistently train hard and complete schoolwork

Table 5 Through this integration, kinesthetic physical exercise is transformed into a medium for the formation of mental responses. When student-athletes experience extreme physical fatigue during a match simulation (adversity), teachers and coaches incorporate CO2RE-based debriefing techniques to train emotional control (Control) and a sense of responsibility (Origin-Ownership).

KK-AQ Curriculum Conceptual Model for Special Sports Classes

The construction of the SSC-based curriculum based on KK-AQ is built on the philosophical foundation of John Dewey's pragmatic-experiential philosophy (1916) as well as *the theory of embodied cognition* which states that the process of human cognition and character grows from the active interaction of the body with its environment (Faella et al., 2025; Freire, 1993). The conceptual framework of the KK-AQ curriculum model describes the flow of inputs, processes, and outputs of learning systematically as presented in Figure 4.

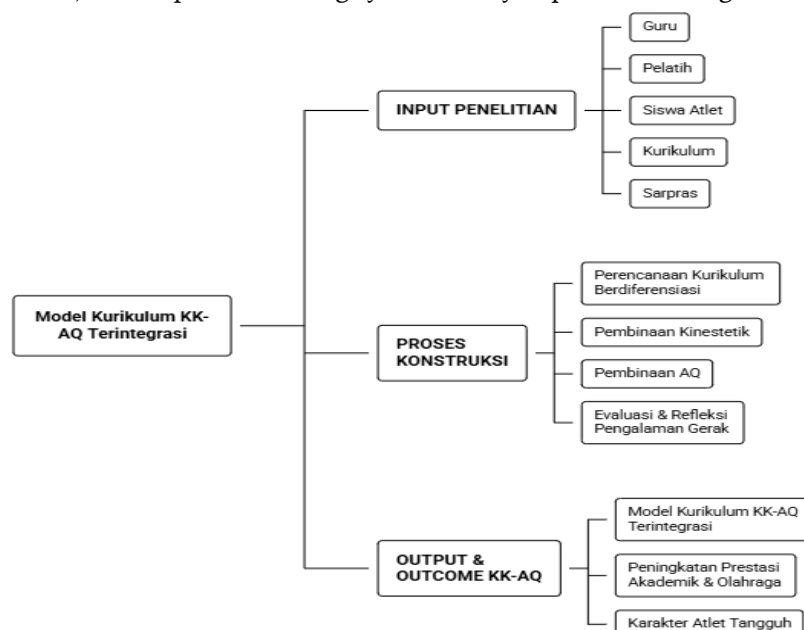


Figure 4. The framework for the construction of the SSC curriculum based on KK-AQ

Figure 4 describes the integrated KK-AQ Curriculum Model Chart providing a conceptual scheme that is structured through three main steps, namely *input*, *process*, and *output and outcome*. The first step, namely *Research Input*, involves important elements such as teachers, coaches, students who exercise, curriculum, and supporting facilities. Then, the Construction Process transforms these components into a real learning scheme, which includes the planning of different curricula, the development of kinesthetic intelligence, the strengthening of the *Adversity Quotient* (AQ), and the evaluation and reflection of the experience of moving. This process produces the *output and outcomes of KK-AQ* in the form of integrated curriculum products, balanced achievement improvement in the academic and sports sectors, and the development of strong athlete character. Overall, this model shows that success in developing student-athletes is highly dependent on cooperation between the readiness of supporting aspects, the combination of balanced physical and mental strength during the learning process, and the achievement of overall achievement targets.

The findings of the study show that the implementation of Special Sports Classes (SSC) in the Special Region of Yogyakarta still faces considerable challenges in balancing academic needs with athlete achievements. The findings from the three schools show that SSC does not yet have a fully independent curriculum structure and is still heavily dependent on the regular curriculum. This condition has an impact on the development of the academic achievement gap between SSC students and regular students. SSC students have an average NSAS input score of 56.20 compared to regular students of 64.39 so there is a difference of 8.19 points. Similarly, the learning results showed that the average academic score of SSC students was 63.09, lower than the average academic score of regular students of 71.54. These results suggest that the burden of training, competition, travel, and academic demands requires more adaptive and flexible curriculum management.

SSC has developed its kinesthetic intelligence through technical training, physical training, professional coaching, competitive experience, and the integration of sport with education. However, its development is still focused mainly on sports practice and has not been fully incorporated into cognitive learning in the classroom. Meanwhile, Adversity Quotient (AQ) develops through discipline, competition, character building, teacher and coach support, and spiritual habituation, but it has not been explicitly stated in the curriculum document. Therefore, these practices must be systematically integrated into the curriculum.

The reconstruction of the KK-AQ-based curriculum is relevant because it combines movement experience with the development of mental resilience using the CO2RE framework which stands for Control, Origin-Ownership, Reach, and Endurance. This integration allows training activities to develop not only motor skills, but also emotional control, responsibility, resilience in the face of failure, and stamina to face academic and athletic challenges. Therefore, the SSC curriculum must be developed by combining schedule flexibility, pedagogical differentiation, movement-based experiential learning, and planned AQ training. The KK-AQ model has the potential to evolve into a more comprehensive curriculum approach that supports student-athletes who have dual careers, allowing them to develop their athletic achievements without sacrificing their academic success or character development.

Conclusions

This study concludes that the implementation of the Special Sports Class (SSC) curriculum in the three selected schools in the Special Region of Yogyakarta continues to face structural and pedagogical challenges, particularly the absence of a dedicated curriculum framework that accommodates the dual demands of academic learning and athletic development. Although kinesthetic abilities are developed through technical training, physical education, sports science, and competitive experiences, these practices remain predominantly oriented toward sports performance and are not yet systematically integrated into classroom learning. Similarly, students' Adversity Quotient (AQ) is fostered through discipline, habituation, participation in competitions, guidance from teachers and coaches, and spiritual values. However, these practices have not been explicitly incorporated into curriculum documents or teaching modules. These findings indicate the need for a more coherent curriculum framework that connects academic learning, kinesthetic development, and resilience building. In response to these challenges, this study proposes the Kinesthetic-Adversity Quotient (KK-AQ) curriculum model as a conceptual alternative for developing a more integrated and context-responsive SSC curriculum. Drawing on embodied cognition and the CO2RE framework, the proposed model provides a foundation for connecting students' physical and sports experiences with academic learning and the development of resilience. Rather than demonstrating its effectiveness in practice, this study establishes a conceptual basis that may inform curriculum design and subsequent empirical evaluation. The model is intended to support the holistic development of student-athletes by addressing academic achievement, athletic performance, and the capacity to respond constructively to challenges. Future research should focus on developing and implementing the KK-AQ curriculum model through research and development (R&D) or mixed-methods approaches involving a broader range of schools across different provinces in Indonesia. Subsequent studies should evaluate its

feasibility, contextual adaptability, implementation processes, and potential outcomes for academic achievement, athletic performance, and student resilience. Further validation across diverse educational settings is also necessary before the model can be recommended for wider adoption. At the policy level, the findings may inform discussions on developing national guidelines for SSC curriculum design that provide a common framework while allowing adaptation to school contexts, student-athlete needs, and local sports priorities. Such efforts could contribute to a more coherent and sustainable approach to integrating academic education and athletic development in Indonesian secondary schools.

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