Enhancing coexistence and reducing motor conflict with sporting games in Physical Education: a pilot study

Mejorar la convivencia y reducir el conflicto motor con juegos deportivos en Educación Física: un estudio piloto

Authors

Paula Pla-Pla [1]
Pere Lavega-Burgués [2]
Unai Sáez de Ocáriz Granja [1]

[1] University of Barcelona (UB), Barcelona, Spain
[2] University of Lleida (UdL), Lleida, Spain

Corresponding author:
Paula Pla-Pla
paulapla@gencat.cat

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Abstract

Introduction: School coexistence is a critical issue in modern education, with conflicts affecting students' emotional well-being and learning processes. Physical Education provides a unique context for developing socio-emotional behavior.
Objective: This study evaluates the influence of two pedagogical frameworks— Sport Education Model and Motor Conduct Education —on conflict perception and emotional responses in adolescent students.
Methodology: A quasi-experimental study was conducted with 76 secondary school students. Participants were divided into a control group (Sport Education Model) and an experimental group (Motor Conduct Education), both engaging in cooperation-opposition motor games based on basketball. Pre- and post-test assessments measured conflict perception (CONFLICT1-AGE, CONFLICT1-RES) and emotional intensity (GES-II). Statistical analyses included paired t-tests and Spearman correlations, with further analyses conducted by sex.
Results: The Motor Conduct Education showed a notable decrease in the perception of motor conflicts, while the Sport Education Model group experienced an increase. The Motor Conduct Education approach also led to a more positive conflict response. Emotional intensity differences between groups were not significant. Correlation analyses revealed that conflict perception was strongly associated with emotional responses, particularly in female students.
Discussion: Motor Conduct Education effectively reduces conflict perception and enhances constructive conflict responses in Physical Education.
Conclusions: These findings highlight its potential to improve school coexistence through structured cooperation-opposition situations.

Keywords

Motor conduct education; emotional regulation; motor conflict; school coexistence; sport education model.

Resumen

Introducción: La convivencia escolar es un tema crítico en la educación moderna, ya que los conflictos afectan el bienestar emocional de los estudiantes y sus procesos de aprendizaje. La Educación Física ofrece un contexto único para el desarrollo de conductas socioafectives.
Objetivo: Este estudio evalúa el impacto de dos marcos pedagógicos— el Modelo de Educación Deportiva y la Educación de las Conductas Motrices—en la percepción del conflicto y las respuestas emocionales en adolescentes.
Metodología: Se llevó a cabo un estudio cuasiexperimental con 76 estudiantes de educación secundaria. Los participantes se dividieron en un grupo control (Modelo de Educación Deportiva) y un grupo experimental (Educación de las Conductas Motrices), ambos involucrados en juegos motores de cooperación-oposición basados en el baloncesto. Las evaluaciones pre y post-test midieron la percepción del conflicto (CONFLICT1-AGE, CONFLICT1-RES) y la intensidad emocional (GES-II). Los análisis estadísticos incluyeron pruebas t pareadas y correlaciones de Spearman, con análisis adicionales realizados por sexo.
Resultados: El grupoEducación de las Conductas Motrices mostró una reducción significativa en la percepción de conflictos motores, mientras que en el grupo SEM esta percepción aumentó. Además, el enfoque Educación de las Conductas Motrices propició una respuesta al conflicto más positiva. No se encontraron diferencias significativas en la intensidad emocional entre los grupos. Los análisis de correlación revelaron que la percepción del conflicto estaba fuertemente asociada con las respuestas emocionales, especialmente en las estudiantes femeninas.
Discusión: La Educación de las Conductas Motrices reduce eficazmente la percepción del conflicto y mejora las respuestas constructivas en la Educación Física.
Conclusiones: Estos hallazgos destacan su potencial para mejorar la convivencia escolar mediante actividades estructuradas de cooperación-oposición. Investigaciones futuras deberían explorar los efectos a largo plazo y sus adaptaciones a diferentes contextos educativos.

Palabras clave

Convivencia escolar; conflicto motor; educación de las conductas motrices; modelo de educación deportiva; regulación emocional.

Introduction

In recent years, the educational environment has seen a significant increase in disruptive behaviors among students (Flower et al., 2014; Smith et al., 2022). This phenomenon has drawn the attention of educators, researchers, and even non-governmental organisations, including the United Nations (2018), through the Sustainable Development Goals (SDGs)—specifically SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 16 (Peace, Justice, and Strong Institutions). These goals promote the improvement of school coexistence as part of a broader vision for sustainable societies.

Multiple factors, such as social, family, and cultural changes, can influence these behaviors, along with a lack of emotional support or disconnection from the school environment (Anabalón et al., 2024; Somerville, 2013; Upreti, 2017). This disruption of coexistence is exacerbated in secondary schools, where students are undergoing the adolescent stage, marked by physical, emotional, and social changes (Vila et al., 2021). During this period, adolescents seek to establish their identity and are often confronted with various tensions (Bermúdez, 2017; Berry et al., 2011; Skoe & von der Lippe, 2005). These factors may lead to disruptive behaviors as a form of expression or response to these challenges (Berry et al., 2011; Upreti, 2017). The absence of tools to manage emotions and situations can lead to the deterioration of school coexistence, affecting not only the involved students but also the overall dynamics of the classroom (Mitic et al., 2021; Schoeps et al., 2020).

Additionally, research suggests that biological sex may influence socio-affective well-being, as hormonal and neurobiological differences contribute to variations in emotional regulation, stress responses, and conflict management strategies (Chaplin & Aldao, 2013; Else-Quest et al.,2006). Furthermore, understanding the role of biological sex in emotional responses and conflict resolution can help tailor interventions that address the specific needs of male and female students, optimizing their socio-affective development (Gartstein et al., 2018).

Schools serve as major contexts for academic and socio-affective development, as well as acculturation, especially for culturally diverse students (Schachner et al., 2017). Interventions aimed at developing socio-affective behavior have shown promise in reducing discomfort and promoting life satisfaction among adolescents (Chernyavska, 2024; Lu & Buchanan, 2014; Rillo-Albert, Lavega-Burgués, et al., 2021; Rillo-Albert, Sáez de Ocáriz, et al., 2021). Additionally, coexistence programs can lead to identity transcendence, where adolescents gain a better understanding of outgroup perspectives, although long-term effects may vary (Olivera, 2005; Skoe & von der Lippe, 2005). Schools can play a vital role by implementing programs that enhance emotional competencies, promote cultural understanding, and create supportive peer environments (López-Sánchez et al., 2023; Mitic et al., 2021; Schachner et al., 2017). These efforts can contribute to better coexistence in diverse classrooms and support the overall well-being and identity formation of adolescents.

Physical Education (PE) plays a crucial role in socialization and attitude development among students (Firmansyah, 2016; Laguna-Mingíbar et al., 2024). Research has shown that PE classes provide a unique environment for fostering interpersonal relationships and emotional growth, while also presenting challenges in managing diverse student interactions (Anabalón et al., 2024; Blegur et al., 2022; Chernyavska, 2024; Sáez de Ocáriz, 2011). Studies have highlighted the potential of PE to create various motor relationship stages that can lead to both positive and negative outcomes, involved coexistence and well-being (Martí-Vilar et al., 2019; Lavega-Burgués et al., 2023; Parlebas, 2001). However, careful consideration must be given to the design and implementation of PE programs to maximize their positive impact on students' social and emotional development while minimizing potential conflicts.

To classify content, games or motor situation are organized into motor action domains (Parlebas, 2001, 2003). El tipus de domini de l'acció motriu influeix directament en el tipus d'interacció social que es genera, establint una relació estreta amb els conflictes motors que poden sorgir (Saéz de Ocáriz Granja & Lavega Burgués, 2015). En aquest context, es destaca que la presència simultània de companys i adversaris en un mateix escenari tendeix a generar una major interacció entre els participants (Caballero et al., 2016; Etxebeste et al., 2014).

This is due to its inherent logic, which necessitates interaction with peers due to the presence of an opponent (Martín-Martínez et al., 2021; Parlebas, 2003; Rillo-Albert, Lavega-Burgués, et al., 2021). Mastery in this domain requires both collaboration with team members and opposition to rivals, thereby enhancing a comprehensive understanding of collaborative and opponent dynamics.

In the context of sports, competition serves as a fundamental element that embodies both cooperation and opposition, presenting a unique arena for studying complex dynamics. Sports inherently involve competition, with teams or individuals vying for superiority based on established metrics such as scores, times, or spatial achievements (Castro-Sánchez et al., 2019). This competitive nature of sports can be harnessed as an educational tool, potentially imparting valuable lessons and fostering personal growth among athletes. However, the intense nature of sports competition can also lead to negative outcomes. The pressure to perform and succeed can generate tensions and conflicts, potentially triggering negative emotions and anxiety (Castro-Sánchez et al., 2019; Mellalieu et al., 2009; Michelini, 2022). To mitigate these potential negative effects and maximize the educational value of sports, it is crucial to cultivate a positive well-being climate (Castro-Sánchez et al., 2019; Laguna-Mengíbar et al., 2024; Mujica & Jiménez, 2021). By focusing on these aspects, sports can be leveraged as a powerful tool for personal development, teaching valuable life skills while minimizing the potential negative impacts of intense competition.

Basketball was initially designed to enhance the emotional well-being of students during physical education classes (Escamilla, 1993). It features rules that strictly limit antireglamentation behaviors to encourage less aggressive interactions among players (Betancor & Almeida, 2000; Mujica, 2021; Mujica & Jiménez, 2021; Torrebadella-Flix & Ticó, 2015). Essentially, basketball is a sport that seeks to foster enjoyable competition by enforcing strict conduct regulations and minimizing risk. This approach sets it apart from other sports that allow more lenient rules regarding physical contact.

However, it's important to note that the effectiveness of basketball in promoting emotional well-being depends on how it is implemented (Sinelnikov & Hastie, 2008). A systematic review by Pla-Pla et al. (2025) underscores the effectiveness of Motor Conducts Education (MCE) and the Sport Education Model (SEM) as learning strategies that significantly improve the socio-affective well-being of adolescents in school settings. As a result, studies suggest that teachers should utilize a range of teaching methods to foster positive interactions in these environments (Evangelio Caballero et al., 2018; Izquierdo, 2022).

For this reason, the aim is to conduct a pilot study evaluating the impact of two pedagogical frameworks—Sport Education Model (SEM) and the Motor Conduct Education (MCE)—enhancing coexistence and reducing motor conflict of adolescents in a formal educational context.

Method

Utilizing a quasi-experimental design and a mixed-methods associative strategy, this study investigated the relationship between variables in a real-world educational context (Creswell & Creswell, 2017; Johnson & Onwuegbuzie, 2004). Quantitative data were obtained through a pre- and post-test administered around the pedagogical intervention. Qualitative data were collected to provide complementary insights. A triangulation matrix was constructed to compare and integrate findings across both approaches, enabling a comprehensive interpretation of the intervention's effects. Four pre-formed groups participated: two experimental and two control.

The research adopted a phenomenological-interpretive perspective and a comparative approach to analyse group differences. The experimental group received Motor Conduct Education, targeting enhanced socio-affective well-being (Lavega-Burgués, 2018). The control group employed a Sport Education Model, which does not prioritize socio-affective well-being (Hastie & Siedentop, 1999; Siedentop, 1994).

This pilot project sought to assess the impact of these pedagogical approaches on coexistence and the decrease of motor conflict among adolescents in formal education.

Participants

The study involved the participation of students from a public high school located in an urban area within the Territorial Service of Lleida, which is considered to have a medium socio-economic level. The

participants were four groups of students in their fourth year of Compulsory Secondary Education (4th of ESO). The initial sample comprised 96 students (65% male, 35% female). To participate in the study, students were required to meet the following inclusion criteria: enrollment in the fourth year of Compulsory Secondary Education (ESO) at the participating school, provision of signed informed consent by parents or legal guardians, and attendance of at least 75% of the scheduled intervention sessions.

The exclusion criteria included: prior participation in structured socio-emotional intervention programs similar to those implemented in the present study, and the presence of special educational needs that could hinder full engagement in the proposed activities.

Additionally, elimination criteria were applied to students who failed to complete the pre- or post-intervention questionnaires properly, or who did not meet the minimum attendance requirement. As a result, 19 students (20% of the initial sample) were excluded from the analysis, yielding a final sample of 76 participants. The final sample for all analyses consisted of 76 valid students (Control Group (CG) = 35 [57% male, 43% female]; Experimental Group (EG) = 41 [63% male, 37% female]; Mage=15.54 years; SD = 0.64).

In compliance with the Declaration of Helsinki, this study received clearance from the Territorial Education Service of Lleida, the Government of Catalonia, and the University of Lleida Ethics Committee [CERT34]. Additionally, all participants signed informed consent before their involvement.

Procedure

The study involved two distinct pedagogical interventions, each implemented over eight sessions. Each session incorporated cooperation-opposition sporting games applied to basketball. To enhance student motivation and introduce a competitive element, a league-format competition was integrated every two sessions. This competition culminated in a final four stage, including semifinals, a final match, and a third-place play-off. Following each competition day, students completed the questionnaires to evaluate their experiences and perceptions related to conflict and emotions in motor situations. To ensure balanced and diverse groups, teams were formed based on an equitable distribution of student skill levels and sex (Ward et al., 2017).

Participants were divided into two groups: an experimental group, which received instruction based on the Motor Conduct Education (MCE) pedagogy, and a control group, which was taught using the Sport Education Model (SEM).

The MCE pedagogy is rooted in Praxeology, the Science of Motor Action, and emphasizes the holistic development of each student. It recognizes the integration of physical, relational, emotional, and cognitive dimensions of personality in response to motor situations, extending beyond the mere execution of technical skills (Parlebas, 2001, 2017, 2018). This approach aims to foster a multidimensional perspective on student development (Lagardera & Lavega, 2005; Lavega-Burgués, 2018; Parlebas, 2018). Motor conduct, within this framework, encompasses not only observable movements but also internal experiences such as emotions and decision-making processes, educate in favor of life and its improvement (Lagardera & Lavega, 2003, 2005). The MCE pedagogy seeks to cultivate emotional regulation and interpersonal relationships through movement (Lavega et al., 2014; Lavega-Burgués, 2018; Parlebas, 2018), ultimately promoting the comprehensive development of the individual across physical, cognitive, emotional, and social domains (Lavega-Burgués, 2018; Parlebas, 2017, 2018). This model is presented as a transformative educational approach that integrates emotional and social learning within physical education, contributing to students' overall personal, social, and physical growth (Lagardera, 2021; Lavega-Burgués, 2018; Parlebas, 2018).

In contrast, the SEM is designed to adapt to the competitive sports experience for the school setting (Siedentop, 1998). This model incorporates several key features: (a) team affiliation, where students remain with a team throughout the instructional unit or "season," assuming various roles such as player, referee, coach, or scorer; (b) skill development, providing opportunities for students to apply their knowledge and skills in both simulated and actual game scenarios, thereby reinforcing tactical and strategic understanding; (c) formal competition, ensuring equitable participation through a structured schedule that balances practice and competitive phases; (d) data recording, involving the documentation of performance-related statistics, effort, or sportsmanship; and (e) a final phase and celebration, which includes concluding matches followed by an awards ceremony (Siedentop et al., 2019). While SEM aims to

replicate a competitive sports structure, it is adapted for educational contexts to ensure inclusivity. All participants are assigned both a playing role and an additional responsibility (e.g., referee, assistant coach), fostering self-management and accountability. The competition format is designed to guarantee equal participation, avoiding elimination rounds that could limit student engagement (Evangelio Caballero et al., 2018; Fernández-Rio & Casey, 2021; Gil-Arias et al., 2021). Throughout the season, game-based learning and modified motor games are utilized to align with students' developmental levels. Adjustments to rules and the internal logic of games (spatial, temporal, and material relationships) are crucial for enhancing both individual and team performance (Evangelio Caballero et al., 2018; Lagardera & Lavega, 2003; Siedentop, 2019). As students take on diverse roles, they progressively assume greater responsibility for their learning, thereby reducing the teacher's role as the primary director of each session. This shift promotes autonomy, enabling students to develop skills and attitudes conducive to continued engagement in sports beyond the school environment (Fernández-Rio & Casey, 2021). The model emphasizes team collaboration, where each member contributes to the group's success, and peer teaching plays a significant role. The teacher primarily acts as a facilitator, providing guidance while allowing student-led management of team tasks (Fernández-Rio & Casey, 2021; Siedentop, 1994, Sinelnikov & Hastie, 2008).

To ensure objectivity in data collection and analysis, a partial masking strategy was implemented across both groups. During the initial sessions, the researcher led activities with the support of the teacher, who was trained in the implementation of both pedagogical approaches. This ensured the teacher could independently conduct sessions while maintaining consistency in instructional methods. Although the teacher was involved in the early stages, full masking was maintained during data processing to prevent bias in the evaluation of intervention outcomes. Analysts remained unaware of group assignments, ensuring an objective assessment of the interventions' effects.

By integrating a structured competition framework with pedagogical strategies focused on training and autonomy, this study aimed to examine not only conflict resolution and coexistence dynamics but also to create an educational setting where students could develop both motor and socio-affective behavior within authentic game situations.

Instrument

Related to socio-affective well-being and coexistence were employed various questionnaires to assess key aspects by mixed method.

Conflict-1 age & conflict-1 res

Students' subjective experiences of conflict in physical education were examined using the CONFLICT1-AGE and CONFLICT1-RES questionnaires, developed and validated by Sáez De Ocáriz and Lavega-Burgués (2020). Both instruments demonstrated strong psychometric properties, including content and response process validity, and showed excellent fit in their internal structure (CFI = 0.994 and RMSEA = 0.033 for CONFLICT1-AGE; CFI = 0.986 and RMSEA = 0.075 for CONFLICT1-RES). Internal consistency was also satisfactory ($\alpha = 0.745$ and $\alpha = 0.737$, respectively). These questionnaires use a 5-point Likert scale (1 (strongly disagree), 5 (strongly agree)). CONFLICT1-AGE investigates student perspectives on the origin of motor conflict (MC), and CONFLICT1-RES assesses their views on reactions to MC. The combined data from these instruments offered a comprehensive view of motor conflict perception in secondary school students.

GES-II

Emotional responses were evaluated through the Games and Emotions Scale (GES-II), validated by Lavega-Burgués et al. (2018). This instrument showed strong construct validity, with excellent model fit indices for the Biopsychological model of five basic emotions (e.g., CFI > 0.98, RMSEA < 0.05 across most game domains). Convergent validity was confirmed through significant correlations with PANAS and POMS scales, and internal consistency was adequate, with median factor loadings above .70 for negative emotions. This scale measures the intensity of five emotions experienced by students at a specific point in time: joy, rejection, fear, anger, and sadness, using a Likert scale from 1 to 7. These emotions are then classified as either positive intensity (joy) or negative intensity (rejection, fear, anger, and sadness).

Data analysis

The quantitative data underwent both descriptive and inferential statistical analysis to assess changes between the initial and final measurements. This evaluation considered distinctions between the two intervention groups (Sport Education Model - SEM and Motor Conduct Education - MCE) and within the male and female subgroups. Before these analyses, the normality of each variable within the different groups and subgroups was verified using the Shapiro-Wilk test. This step ensured the appropriateness of parametric statistical methods. Where the assumption of normality was not met, suitable non-parametric alternatives were applied. To determine differences in four key variables—conflict-generating agent, response to conflict, well-being, and discomfort—paired samples t-tests were utilized to compare values obtained before and after the intervention for each group. This analysis aimed to identify temporal changes in the perception of the conflict-generating agent, conflict response strategies, well-being levels, and reported discomfort. Furthermore, the relationship between the perception of the conflict-generating agent and the conflict response, along with their connection to emotional intensity, was explored through Spearman's rank correlation coefficient, both within the overall sample and when considering participant sex. All statistical computations were performed using Jamovi Statistics, version 2.6 (Kerby, 2014; Pohlert, 2021; R Core Team, 2024; The jamovi project, 2024). For enhanced interpretation of the findings, visualizations created with JASP, version 0.18.3 (JASP Team, 2024), were employed. These figures graphically represent the variations in the assessed variables across groups and between sexes, offering a clear illustration of the intervention's effects and the interplay between the examined factors. For the qualitative data, a deductive analytical approach was adopted, guided by the pre-established research questions and coding scheme (Fereday & Muir-Cochrane, 2006) (Table 1). However, the analytical process also incorporated an inductive element to refine and expand the categories as new insights emerged from the data. ATLAS.ti, version 23.2.1, was the software used for the analysis of the qualitative data.

Table 1. Categories and subcategories for qualitative variables

Variable	Category	Subcategory
Perception of the number of conflicts	Any conflict Few conflicts (between 1 and 2) Many conflicts (between 3 and 5) A lot of conflicts (more than 6)	
Perception of provoked conflicts	Any conflict Few conflicts (between 1 and 2) Many conflicts (between 3 and 5) A lot of conflicts (more than 6)	
Reason of the conflict	Participants	Adjusted motor conduct Detects the appearance of a disagreement In relation to the action of the motor conflict In relation to the response of the motor conflict Negative emotion
	Rules of the game	In relation to internal logic (relation to the others)
	Lack of knowledge	
Emotional perception	Well-being	In relation to the adjusted motor conduct In relation to the educational context In relation to the internal logic
	Discomfort	In relation to the others In relation to the educational context
	Lack of knowledge	

Results

The data analysis revealed differences between the control group (SEM) and experimental group (MCE) approaches in emotional intensity and motor conflict perception.

Quantitative data

Pre- and Post-Test Group Comparison

Table 1 presents the descriptive pre- and post-intervention values for the SEM and the MCE across the different evaluated variables. In the SEM group, a significant increase was observed in the perception of the conflict-generating agent ($p < 0.05$) and in the conflict response ($p < 0.001$). Additionally, positive

emotional intensity (well-being) significantly decreased ($p < 0.05$), while negative emotional intensity (discomfort) also showed a significant reduction ($p < 0.05$) (Table 2; Figure 1).

Table 2. Pre- and post-intervention comparison between groups

	Control group (SEM)					Experimental group (MCE)				
	M (SD) Pre	M (SD) Post	MD	ES	p	M (SD) Pre	M (SD) Post	MD	EE	p
Conflict generating agent	1.75 (0.75)	2.14 (0.59)	-0.50	-0.60	<0.05	2.58 (0.76)	1.33 (0.46)	1.29	0.94	<0.001
Conflict response	1.53 (0.82)	2.12 (0.53)	-0.80	-0.65	<0.001	2.43 (0.64)	1.26 (0.39)	1.20	0.96	<0.001
Positive emotional intensity (well-being)	5.43 (1.48)	4.51 (2.33)	1.50	0.39	<0.05	4.63 (2.29)	4.54 (2.38)	0.09	0.03	0.829
Negative emotional intensity (discomfort)	2.55 (0.99)	2.13 (1.68)	0.60	0.43	<0.05	2.25 (0.63)	1.71 (0.82)	0.58	0.49	<0.05

Note: **M**=mean; **SD**=standard deviation; MD=mean difference; ES=effect size; **p**=significance.

In contrast, the MCE exhibited a significant decrease in the perception of the conflict-generating agent and in the conflict response (both $p < 0.001$). However, no significant changes were found in positive emotional intensity ($p = 0.829$) or negative emotional intensity ($p < 0.05$) (Table 2; Figure 1).

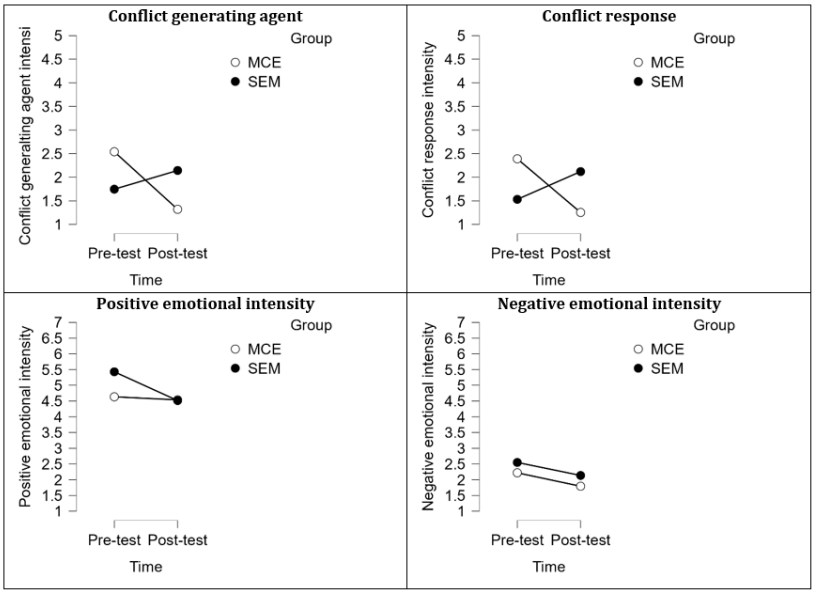
Table 3 presents the differences between groups after the intervention. Significant differences were found in the perception of the conflict-generating agent ($p < 0.001$) and in the conflict response ($p < 0.001$), with lower mean values in MCE. In contrast, no significant differences were observed in positive emotional intensity ($p = 0.183$) or negative emotional intensity ($p = 0.790$) between the two groups (Table 3).

Table 3. Post-intervention differences between groups

	Control group (SEM) vs Experimental Group (MCE)		
	MD	*EE*	*p*
Conflict generating agent	-1.62	-1.84	<0.001
Conflict response	-1.73	-1.90	<0.001
Positive emotional intensity (well-being)	0.817	0.30	0.183
Negative emotional intensity (discomfort)	0.05	-0.03	0.790

Note: MD=mean difference; EE=effect size; *p*=significance.

Figure 1. Mean differences between groups.



Correlation matrix for post-intervention variables

Table 4 presents the Spearman correlation matrix for post-intervention variables in both groups. In MCE, the perception of the conflict-generating agent was positively correlated with conflict response ($p < 0.001$). In SEM, this correlation was also significant ($p < 0.001$), as was the relationship between conflict response and negative emotional intensity ($p < 0.001$). In the female experimental group, a significant positive correlation was observed between the perception of the conflict-generating agent and conflict response ($r = 0.801$, $p < 0.001$), whereas in the female control group, conflict response was significantly correlated with negative emotional intensity ($p < 0.05$) (Table 4).

Table 4. Post-intervention differences between groups

		Experimental group (MCE)			Control group (SEM)		
Variable 1	Variable 2	ρ (Rho)	df	p	ρ (Rho)	df	p
Conflict generating agent	Conflict response	0.775	39	< .001	0.633	33	< .001
Conflict generating agent	Positive emotional intensity (well-being)	0.133	39	0.407	-0.144	33	0.409
Conflict generating agent	Negative emotional intensity (discomfort)	-0.172	39	0.283	0.446	33	< .001
Conflict response	Positive emotional intensity (well-being)	-0.011	39	0.946	-0.053	33	0.763
Conflict response	Negative emotional intensity (discomfort)	-0.071	39	0.660	0.579	33	< .001
Positive emotional intensity (well-being)	Negative emotional intensity (discomfort)	-0.204	39	0.200	0.111	33	0.527

Note: ρ = Spearman's correlation coefficient; df = degrees of freedom; p=significance.

Results by sex

Pre- and Post-Test Differences by Sex in Each Group

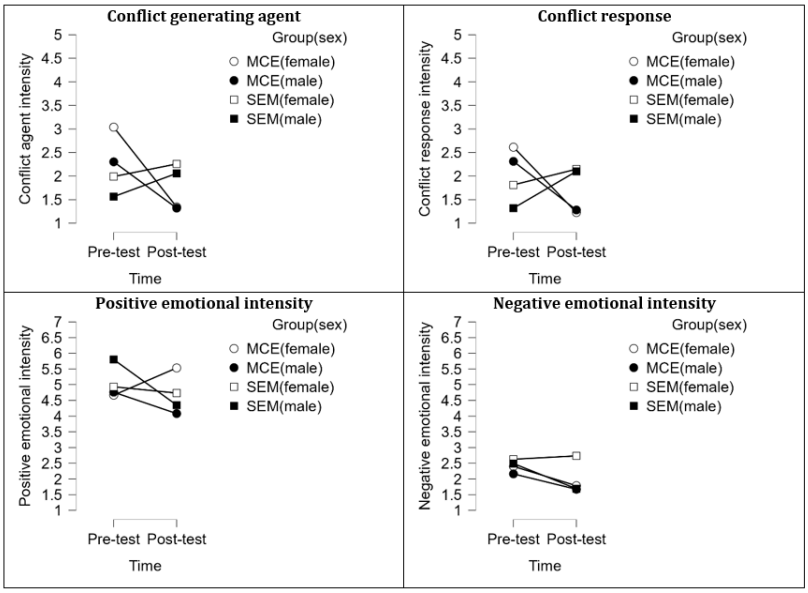
Table 5 presents the pre- and post-intervention differences by sex within each group. In SEM, males showed a significant increase in the perception of the conflict-generating agent ($p < 0.05$) and in conflict response ($p < 0.05$). In MCE, both males and females showed a significant reduction in both variables ($p < 0.001$). No significant differences were found in positive or negative emotional intensity based on sex within each group (Table 5; Figure 2).

Table 5. Pre- and post-intervention comparison in the control group (SEM) and experimental group (MCE) by sex

	Control group (SEM)										Experimental group (MCE)									
	Male					Female					Male					Female				
	M (SD) Pre	M (SD) Post	MD	EE	p	M (SD) Pre	M (SD) Post	MD	EE	p	M (SD) Pre	M (SD) Post	MD	EE	p	M (SD) Pre	M (SD) Post	MD	EE	p
Conflict generating agent	1.56 (0.64)	2.06 (0.58)	-0.64	0.15	<0.05	1.99 (0.83)	2.26 (0.60)	-0.36	0.26	0.158	2.30 (0.73)	1.32 (0.49)	0.93	0.19	<0.001	3.04 (0.56)	1.34 (0.43)	1.72	0.16	<0.001
Conflict response	1.32 (0.54)	2.10 (0.53)	-1.00	0.16	<0.05	1.81 (1.03)	2.15 (0.53)	-0.40	0.33	0.268	2.31 (0.58)	1.28 (0.42)	1.10	0.15	<0.001	2.61 (0.70)	1.23 (0.35)	1.30	0.21	<0.001
Positive emotional intensity (well-being)	5.80 (1.00)	4.35 (2.30)	2.00	0.59	<0.05	4.93 (1.87)	4.73 (2.43)	0.38	0.43	0.718	4.76 (2.20)	4.08 (2.47)	1.50	0.54	0.243	4.67 (2.38)	5.53 (1.85)	-1.50	0.75	0.227
Negative emotional intensity (discomfort)	2.49 (0.64)	1.69 (1.16)	0.98	0.24	<0.05	2.62 (1.39)	2.73 (2.09)	0.05	0.39	0.826	2.16 (0.69)	1.67 (0.79)	0.48	0.26	0.069	2.40 (0.51)	1.78 (0.90)	0.76	0.26	0.053

Note: MD=mean difference; EE=effect size; *p*=significance.

Figure 2. Mean differences between groups by sex.



Finally, Tables 6 and 7 present the Spearman correlations segmented by sex and group. In the female experimental group, a significant positive correlation was observed between the perception of the conflict-generating agent and conflict response ($p < 0.001$), whereas in the female control group, conflict response was significantly correlated with negative emotional intensity ($p = 0.003$) (Table 6 and 7).

Table 6. Spearman correlation matrix for post-intervention variables in control group by sex

		Control Group (SEM)					
		Male			Female		
Variable 1	Variable 2	ρ (Rho)	df	p	ρ (Rho)	df	p
Conflict generating agent	Conflict response	0.596	18	<0.05	0.614	13	<0.05
Conflict generating agent	Positive emotional intensity (well-being)	-0.092	18	0.700	-0.224	13	0.421
Conflict generating agent	Negative emotional intensity (discomfort)	0.367	18	0.111	0.396	13	0.143
Conflict response	Positive emotional intensity (well-being)	-0.148	18	0.532	0.024	13	0.931
Conflict response	Negative emotional intensity (discomfort)	0.463	18	<0.05	0.714	13	<0.05
Positive emotional intensity (well-being)	Negative emotional intensity (discomfort)	-0.132	18	0.578	0.348	13	0.203

Note: ρ = Spearman's correlation coefficient; df = degrees of freedom; p=significance.

Table 7. Spearman correlation matrix for post-intervention variables in experimental group by sex

		Experimental Group (MCE)					
		Male			Female		
Variable 1	Variable 2	ρ (Rho)	df	p	ρ (Rho)	df	p
Conflict generating agent	Conflict response	0.614	13	<0.05	0.801	24	< .001
Conflict generating agent	Positive emotional intensity (well-being)	-0.224	13	0.421	0.244	24	0.229
Conflict generating agent	Negative emotional intensity (discomfort)	0.396	13	0.143	-0.244	24	0.229
Conflict response	Positive emotional intensity (well-being)	0.024	13	0.931	0.053	24	0.796
Conflict response	Negative emotional intensity (discomfort)	0.714	13	<0.05	-0.227	24	0.265
Positive emotional intensity (well-being)	Negative emotional intensity (discomfort)	0.348	13	0.203	-0.216	24	0.288

Note: ρ = Spearman's correlation coefficient; df = degrees of freedom; p=significance.

The SEM group showed a significant increase in the perception of the conflict-generating agent and conflict response, along with a decrease in well-being and discomfort. In contrast, the MCE group exhibited a significant reduction in conflict perception and response but no changes in well-being. Post-intervention, significant differences between groups were found in conflict-related variables, with MCE showing lower values. Correlations revealed strong links between conflict perception and response in both groups, with differences by sex.

Qualitative data

In the qualitative analysis, the responses from the pre- and post-test were compared within each group (SEM and MCE), as well as between groups and between sexes (male and female).

Perception of the number of motor conflicts

Table 8 presents the pre- and post-test distribution of participants' perceptions regarding the number of motor conflicts in both groups. In the pre-test phase, 27.6% of participants in both groups reported experiencing no conflicts, while a small percentage indicated experiencing multiple conflicts. In the post-test, the percentage of participants perceiving no conflicts increased in both groups, with a greater rise observed in MCE (43.4%) compared to SEM (32.9%). Conversely, the percentage of participants perceiving few, many, or a lot of conflicts remained relatively low across both groups, with minimal variation from pre- to post-test (Table 8).

Table 8. Pre and post-test descriptive statistics in the perception variable of the number of motor conflicts

	Perception of the number of conflicts (pre)		Perception of the number of conflicts (post)	
	SEM	MCE	SEM	MCE
Any conflict	21 (27.6%)	21 (27.6%)	25 (32.9%)	33 (43.4%)
Few conflicts (between 1 and 2)	11 (14.5%)	12 (15.8%)	9 (11.8%)	7 (9.2%)
Many conflicts (between 3 and 5)	3 (3.9%)	6 (7.9%)	1 (1.3%)	1 (1.3%)
A lot of conflicts (more than 6)	0 (0.0%)	2 (2.6%)	0 (0.0%)	0 (0.0%)

Table 9 provides a breakdown of the perception of motor conflicts before and after the intervention, segmented by sex. Among male participants in the control group (SEM), the percentage reporting no conflicts increased from 17.1% to 18.4%, whereas in the experimental group (MCE), it rose from 18.4% to 28.9%. For female participants, the increase was more pronounced in the experimental group, rising from 9.2% to 14.5%. The distribution of participants perceiving few, many, or a lot of conflicts remained stable, with only minor fluctuations across both groups and sexes (Table 9).

Table 9. Descriptive statistics before and after the test in the variable perception of the quantity of motor conflicts according to sex

	Perception of the number of conflicts (pre)				Perception of the number of conflicts (post)			
	SEM		MCE		SEM		MCE	
	male	female	male	female	male	female	male	female
Any conflict	13 (17.1%)	8 (10.5%)	14 (18.4%)	7 (9.2%)	14 (18.4%)	11 (14.5%)	22 (28.9%)	11 (14.5%)
Few conflicts (between 1 and 2)	6 (7.9%)	5 (6.6%)	7 (9.2%)	5 (6.6%)	6 (7.9%)	3 (3.9%)	4 (5.3%)	3 (3.9%)
Many conflicts (between 3 and 5)	1 (1.3%)	2 (2.6%)	4 (5.3%)	2 (2.6%)	0 (0.0%)	1 (1.3%)	0 (0.0%)	1 (1.3%)
A lot of conflicts (more than 6)	0 (0.0%)	0 (0.0%)	1 (1.3%)	1 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Perception of provoked motor conflicts

Table 10 presents the distribution of participants' perceptions regarding the number of motor conflicts they provoked before and after the intervention in both groups. In the pre-test, 36.8% of participants in SEM and 31.6% in MCE reported not provoking any conflicts. In the post-test, this percentage increased significantly in MCE (51.3%), while it slightly decreased in SEM (28.9%).

The proportion of participants reporting few conflicts (1–2) decreased notably in the experimental group, dropping from 15.8% to 2.6%, whereas in the control group, it increased from 7.9% to 11.8%. Similarly, those who reported provoking many conflicts (3–5) remained stable in the control group but decreased to 0% in the experimental group. No participants in either group reported provoking more than six conflicts in the post-test (Table 10).

Table 10. Descriptive pre and post-test statistics in the variable perception of the number of motor conflicts provoked

	Perception of provoked conflicts (pre)		Perception of provoked conflicts (post)	
	SEM	MCE	SEM	MCE
Any conflict	28 (36.8%)	24 (31.6%)	22 (28.9%)	39 (51.3%)
Few conflicts (between 1 and 2)	6 (7.9%)	12 (15.8%)	9 (11.8%)	2 (2.6%)
Many conflicts (between 3 and 5)	1 (1.3%)	4 (5.3%)	4 (5.3%)	0 (0.0%)
A lot of conflicts (more than 6)	0 (0.0%)	1 (1.3%)	0 (0.0%)	0 (0.0%)

Table 11 provides a breakdown of the perception of motor conflicts provoked before and after the intervention, segmented by sex. In the pre-test, 21.1% of males and 15.8% of females in the control group (SEM) reported not provoking any conflicts, while in the experimental group (MCE), these values were 22.4% for males and 9.2% for females. In the post-test, the percentage of participants perceiving no provoked conflicts increased in the experimental group, reaching 32.9% for males and 18.4% for females, whereas in SEM, the values remained relatively stable.

The percentage of participants reporting few conflicts (1–2) showed a decrease in the experimental group, particularly among males (from 9.2% to 1.3%) and females (from 6.6% to 1.3%). Similarly, the proportion of participants reporting many conflicts (3–5) remained low across all groups and sexes, with no reports of more than six conflicts in the post-test (Table 11).

Table 11. Pre and post-test descriptive statistics in the perception variable of the number of motor conflicts provoked by sex

	Perception of provoked conflicts (pre)				Perception of provoked conflicts (post)			
	SEM		MCE		SEM		MCE	
	male	female	male	female	male	female	male	female
Any conflict	16 (21.1%)	12 (15.8%)	17 (22.4%)	7 (9.2%)	12 15.8%)	10 (13.2%)	25 (32.9%)	14 (18.4%)
Few conflicts (between 1 and 2)	3 (3.9%)	3 (3.9%)	7 (9.2%)	5 (6.6%)	7 (9.2%)	2 (2.6%)	1 (1.3%)	1 (1.3%)
Many conflicts (between 3 and 5)	1 (1.3%)	0 (0.0%)	1 (1.3%)	3 (3.9%)	1 (1.3%)	3 (3.9%)	0 (0.0%)	0 (0.0%)
A lot of conflicts (more than 6)	0 (0.0%)	0 (0.0%)	1 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

Reason of the motor conflict

Table 12 presents the pre- and post-test distribution of participants' perceptions regarding the reason for motor conflicts in both groups. In the pre-test, the most frequently reported reason in both groups was adjusted motor conduct (14.5% in SEM and 21.1% in MCE), followed by lack of knowledge (14.5% in SEM and 15.8% in MCE). These results align with participants' open responses. For instance, a male student in the MCE group explained his conflict perception by stating that "in the last match, someone was walking with the ball or touching it with their leg", while a female participant noted "there were cheats in the other team". In the SEM group, a female participant remarked: "I don't like it when people insult others", and a male added: "They commit fouls and don't call them, and when you do one, they complain." These comments suggest a perception of unfairness and lack of regulation as relevant sources of conflict, especially in the control group.

In the post-test, adjusted motor conduct increased significantly in both groups, particularly in the MCE group (from 21.1% to 32.9%). This suggests that after the intervention, participants were more aware of motor rules and conduct agreements, possibly as a result of pedagogical work on decision-making and responsibility. This trend was also reflected in qualitative data. A male student in the MCE group stated: "They were fair, they followed the agreed rules," while a female student noted: "None of that happened today," referring to prior conflictive behavior. These expressions suggest that, in the experimental group, the intervention contributed to minimizing inappropriate conduct and enhancing self-regulation.

Other reasons for motor conflicts, such as "detecting the appearance of a disagreement" or "in relation to the response in the motor conflict," remained relatively stable with minor variations between pre- and post-test. Negative emotion, which had been reported by a small number of students in the pre-test, disappeared entirely in the post-test phase across both groups, indicating a possible reduction in emotionally triggered conflicts (Table 12).

Table 12. Pre and post-test descriptive statistics on the variable perception of the reason of the conflict

	Reason of the conflict (pre)		Reason of the conflict (post)	
	SEM	MCE	SEM	MCE
Adjusted motor conduct	11 (14.5%)	16 (21.1%)	17 (22.4%)	25 (32.9%)
Detects the appearance of a disagreement	1 (1.3%)	6 (7.9%)	4 (5.3%)	1 (1.3%)
In relation to the action of the motor conflict	3 (3.9%)	4 (5.3%)	1 (1.3%)	2 (2.6%)

In relation to the response in the motor conflict	5 (6.6%)	1 (1.3%)	1 (1.3%)	4 (5.3%)
Negative emotion	2 (2.6%)	1 (1.3%)	0 (0.0%)	0 (0.0%)
In relation to internal logic (relation to the others)	2 (2.6%)	1 (1.3%)	2 (2.6%)	1 (1.3%)
Lack of knowledge	11 (14.5%)	12 (15.8%)	10 (13.2%)	8 (10.5%)

Table 13 presents the same data segmented by sex. In the pre-test, the most frequently reported reason among male participants was adjusted motor conduct (13.2% in SEM and 14.5% in MCE), whereas among females, lack of knowledge was more common (9.2% in SEM and 6.6% in MCE). This suggests a possible difference in how conflicts were interpreted, with boys more focused on actions and girls more on procedural understanding or fairness. In the post-test, adjusted motor conduct increased in both sexes and groups, especially among males in the MCE group (21.1%). At the same time, lack of knowledge decreased across the board, and no students reported conflicts based on negative emotion.

The qualitative data reinforces these tendencies. For example, in the SEM group, a female student reported in the post-test: "One classmate was constantly insulting others," revealing the persistence of interpersonal tension despite the completion of the intervention. In contrast, a male student in the same group mentioned: "No one cheated," showing a more neutral or even positive perception. These statements, while contradictory, reflect the heterogeneity of experiences within the same pedagogical model.

Overall, the triangulation of quantitative and qualitative data suggests that the MCE intervention helped to clarify rules and foster shared agreements, reducing conflictive behaviors based on misunderstanding or lack of regulation. Furthermore, the shift from emotionally based conflict to more structured perceptions (e.g., adjusted motor conduct) highlights the potential of this model to promote a more reflective and norm-oriented climate during motor practice (Table 13).

Table 13. Pre and post-test descriptive statistics on the variable perception of the reason of the conflict by sex

	Reason of the conflict (pre)				Reason of the conflict (post)			
	SEM		MCE		SEM		MCE	
	male	female	male	female	male	female	male	female
Adjusted motor conduct	10 (13.2%)	1 (1.3%)	11 (14.5%)	5 (6.6%)	12 (15.8%)	5 (6.6%)	16 (21.1%)	9 (11.8%)
Detects the appearance of a disagreement	0 (0.0%)	1 (1.3%)	4 (5.3%)	2 (2.6%)	2 (2.6%)	2 (2.6%)	1 (1.3%)	0 (0.0%)
In relation to the action of the motor conflict	2 (2.6%)	1 (1.3%)	1 (1.3%)	3 (3.9%)	0 (0.0%)	1 (1.3%)	2 (2.6%)	0 (0.0%)
In relation to the response in the motor conflict	3 (3.9%)	2 (2.6%)	0 (0.0%)	1 (1.3%)	0 (0.0%)	1 (1.3%)	2 (2.6%)	2 (2.6%)
Negative emotion	0 (0.0%)	2 (2.6%)	1 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
In relation to internal logic (relation to the others)	1 (1.3%)	1 (1.3%)	0 (0.0%)	1 (1.3%)	2 (2.6%)	0 (0.0%)	0 (0.0%)	1 (1.3%)
Lack of knowledge	4 (5.3%)	7 (9.2%)	9 (11.8%)	3 (3.9%)	4 (5.3%)	6 (7.9%)	5 (6.6%)	3 (3.9%)

Perception of emotional intensity

Table 14 presents the pre- and post-test distribution of participants' emotional perceptions in both groups. In the pre-test phase, the most frequently reported emotional perception was well-being in relation to the educational context (21.1% in SEM and 23.7% in MCE), followed by well-being in relation to adjusted motor conduct (10.5% in SEM and 19.7% in MCE). These results are in line with the participants' open comments. For instance, a female student in the MCE group stated that she felt joy "because I had a great time with new games", while a male participant in the same group expressed simply: "I really enjoyed the class." In contrast, some SEM participants showed less engagement or emotional connection. One male student reported rejection, explaining that "I don't like basketball," while a female student noted emotional neutrality: "Nothing negative happened to feel the other emotions."

In the post-test, well-being in relation to the educational context remained the most frequently reported perception in both groups, increasing slightly in the MCE group (from 23.7% to 26.3%). This improve-

ment was supported by qualitative evidence. A male student from the MCE group attributed his emotional intensity to "the immersion in the game," while a female student described the session as "very productive and fun." These comments suggest that the pedagogical intervention fostered greater emotional involvement and a more meaningful experience in physical education classes (Table 14).

Table 14. Pre and post-test descriptive statistics in the emotional perception variable

	Emotional perception (pre)		Emotional perception (post)	
	SEM	MCE	SEM	MCE
Well-being in relation to the adjusted motor conduct	8 (10.5%)	15 (19.7%)	5 (6.6%)	4 (5.3%)
Well-being in relation to the educational context	16 (21.1%)	18 (23.7%)	14 (18.4%)	20 (26.3%)
Well-being in relation to the internal logic	1 (1.3%)	0 (0.0%)	2 (2.6%)	2 (2.6%)
Discomfort in relation to the others	2 (2.6%)	1 (1.3%)	1 (1.3%)	1 (1.3%)
Discomfort in relation to the educational context	3 (3.9%)	2 (2.6%)	1 (1.3%)	1 (1.3%)
Lack of knowledge	5 (6.6%)	5 (6.6%)	12 (15.8%)	12 (15.8%)

Conversely, well-being in relation to adjusted motor conduct decreased in both groups in the post-test (from 10.5% to 6.6% in SEM, and from 19.7% to 5.3% in MCE), which may suggest that other contextual or social-emotional factors gained more relevance. Reports of discomfort in relation to others and to the educational context remained relatively stable, while lack of knowledge showed an increase in both groups, especially in SEM.

Table 15 shows the same results segmented by sex. In the pre-test, both males and females in the MCE group most frequently reported well-being in relation to the educational context (15.8% for males and 7.9% for females). A similar pattern was observed in the SEM group (11.8% males and 9.2% females). Despite these similarities, the qualitative data revealed meaningful gendered nuances. For example, a female student in the SEM group reported feeling negative because "José hit my friend," highlighting how social interactions and interpersonal conflict influenced her emotional experience. In contrast, a male student from the same group indicated: "I was looking forward to the activity," showing a positive anticipatory emotional state, possibly linked to task motivation rather than interpersonal dynamics.

In the post-test, well-being in relation to the educational context slightly increased among males in the MCE group (from 15.8% to 17.1%), maintaining its position as the most reported emotional perception across all subgroups. These quantitative findings, enriched by participants' testimonies, suggest that the pedagogical intervention—particularly within the MCE group—contributed to promoting a more emotionally meaningful and inclusive environment in physical education, especially through cooperative and less competitive motor experiences(Table 15).

Table 15. Pre and post-test descriptive statistics in the emotional perception variable by sex

	Emotional perception (pre)				Emotional perception (post)			
	SEM		MCE		SEM		MCE	
	male	female	male	female	male	female	male	female
Well-being in relation to the adjusted motor conduct	4 (5.3%)	4 (5.3%)	8 (10.5%)	7 (9.20%)	3 (3.9%)	2 (2.6%)	3 (3.9%)	1 (1.3%)
Well-being in relation to the educational context	9 (11.8%)	7 (9.2%)	12 (15.8%)	6 (7.90%)	9 (11.8%)	5 (6.6%)	13 (17.1%)	7 (9.2%)
Well-being in relation to the internal logic	1 (1.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (2.6%)	0 (0.0%)	0 (0.0%)	2 (2.6%)
Discomfort in relation to the others	2 (2.6%)	0 (0.0%)	1 (1.3%)	0 (0.0%)	0 (0.0%)	1 (1.3%)	2 (2.6%)	0 (0.0%)
Discomfort in relation to the educational context	2 (2.6%)	1 (1.3%)	2 (2.6%)	0 (0.0%)	1 (1.3%)	0 (0.0%)	0 (0.0%)	1 (1.3%)

Lack of kno-wledge	2 (2.6%)	3 (3.9%)	3 (3.9%)	2 (2.6%)	5 (6.6%)	7 (9.2%)	8 (10.5%)	4 (5.3%)

The results indicate differences in the perception of motor conflicts, conflict reasons, and emotional responses between groups. The experimental group showed a reduction in perceived provoked conflicts and an increase in recognizing adjusted motor conduct as a reason for conflict. Additionally, emotional perception remained stable or improved, with well-being in relation to the educational context being the most reported category. Spearman correlation analyses revealed significant relationships between conflict perception, emotional intensity, and conflict responses, with differences observed between sexes.

Quantitative and Qualitative triangulation

Table 16 presents the triangulation matrix comparing the quantitative and qualitative findings of the study. The matrix shows that for key dimensions such as conflict perception and gender differences, there was convergence between both data sources. In the case of emotional well-being, qualitative findings suggested a slight increase not captured in the quantitative data, pointing to a possible divergence or complementary insight (Table 16).

Table 16. Triangulation Matrix

Dimension	Quantitative finding	Qualitative finding	Triangulation type
Perception of provoked motor conflicts	Significant reduction in self-reported provocation in MCE (Table 10)	Qualitative codes show greater awareness of adjusted motor conduct (Table 12)	Complementarity
Reason of the motor conflict	Conflict-generating agent decreased in MCE group (Table 2)	Participants attributed conflicts more to “adjusted motor conduct” post-intervention	Complementarity
Conflict perception	Decrease in MCE group ($p < .001$)	More students in MCE reported “no conflicts” in post-test	Convergence
Perception of emotional intensity	No significant increase in well-being in MCE ($p = .829$)	Reports of “well-being in relation to educational context” increased slightly (Table 14)	Divergence
Gender differences	No significant sex differences in MCE for emotional variables (Table 5)	Similar trends observed in narrative responses among males and females	Convergence

Discussion

This pilot study aimed to compare the effects of Motor Conduct Education (MCE) and the Sport Education Model (SEM) on adolescents’ coexistence and motor conflict. The goal was to examine whether pedagogical approaches influence socio-affective outcomes in PE settings.

Motor Conduct Education (MCE) is introduced as a pedagogical approach in PE designed to promote peaceful conflict resolution and enhance a harmonious classroom environment.

Motor Conduct Education reduces motor conflict perception

Findings from this research underscore the positive influence of MCE on school coexistence and students' socio-affective behavior. This educational approach was observed to lessen the perception of motor conflicts in the SEM group, in contrast to the SEM group. Given that MCE originates through motor praxeology, integrating the social-relational dimension within physical education (Parlebas, 2003, 2017), it promotes awareness and proper management of motor conflicts, leading to a reduction in negative emotional intensity.

Basketball, as a cooperative-oppositional motor situation requiring both collaboration and opposition, facilitated this process. Despite the competitive nature of the sessions, students reported a significant reduction in conflict perception over time—an outcome consistent with findings from similar interventions(Rillo-Albert, Lavega-Burgués, et al., 2021; Rillo-Albert, Sáez de Ocáriz, et al., 2021). These results confirm that MCE creates a favourable learning climate for developing emotional competencies and improving classroom coexistence (Blegur et al., 2022; Caurín Alonso et al., 2019).

The integration of sporting games within basketball served as a method to improve socio-affective conducts

A fundamental aspect of this investigation acknowledges that sporting games represent a vital pedagogical resource for nurturing students' physical and socio-emotional growth. By integrating these motor games into the basketball context, the study illuminates how the dynamics of collaboration and rivalry can strengthen positive interactions in the school environment and enhance abilities in conflict resolution. Drawing upon the work of Parlebas (2001, 2017), it is understood that motor games provide a structured setting for observing students' social interactions and behaviors in scenarios requiring coexistence. Basketball was specifically chosen due to its inherent design, which aims to promote emotional well-being while minimizing the risk of physical harm among players (Mujica, 2021; Mujica & Jiménez, 2021). Escamilla (1993) noted that basketball was intentionally created with specific rules to limit physical contact, thus reducing aggression and promoting fair play (Betancor & Almeida, 2000; Mujica, 2019; Naismith, 1914). The data from this study supports that basketball, with its clear rules on physical interaction, offers a positive environment for controlled and cooperative competition. This lowers the possibility of motor conflicts and encourages respectful interaction among students, leading to better school coexistence (Flower et al., 2014; Smith et al., 2022).

These outcomes emphasize basketball's function as an educational instrument for both physical development and the cultivation of coexistence and positive emotions (Betancor & Almeida, 2000; Muñoz-Arroyave et al., 2020).

Additionally, the research showed clear variations in how conflict was perceived and the strength of emotions felt across the different groups and between genders. Notably, male participants in the experimental group (MCE) reported a significant increase in their perception of conflict after the intervention, while female participants maintained a more stable view. Regarding emotional intensity, both male and female participants in the MCE group experienced a significant drop in negative emotional intensity, suggesting better emotional regulation following the intervention. These findings support the idea that Motor Conduct Education not only impacts conflict management but also improves participants' emotional control.

Sex differences did not play a crucial role in enhancing coexistence

A primary finding of this research is the lack of significant gender differences in improving coexistence within the MCE group. This suggests MCE is an equitable method, benefiting both male and female students equally. This has important implications for managing diversity in education, particularly gender equality in PE. The discussion now considers the link between cultural and social diversity and gender, proposing inclusive strategies using MCE. Literature highlights the need to address cultural and social differences in school coexistence, a growing issue (Chaplin & Aldao, 2013; Else-Quest et al., 2006). This study shows motor games can bridge these gaps, offering an inclusive space for social development in a cooperative-competitive setting.

Competitive environments as a tool for resolving conflicts

Although sports competitions may sometimes cause disagreements, this research proposes that, with good management, they can be a useful tool for conflict resolution (Mellalieu et al., 2009). Many studies have shown that competition, when used educationally, can help students understand cooperation and opposition better, thus aiding them in developing conflict resolution behavior (Blázquez, 1999; Burgueño & Medina-casaubón, 2020). Using real examples of regulated competition in basketball further shows its importance in resolving conflicts. In basketball, the competitive setting allows for social learning, if physical contact is controlled. This study points out that regulated competition not only improves physical skills but also helps develop socio-affective behaviors that encourage coexistence. Motor games, with their built-in way of promoting both cooperation and opposition, have been found to be a strong tool for improving conflict management (Chernyavska, 2024; Michelini, 2022).

Motor praxeology as a vital educational instrument

Based on the key contributions of Parlebas (2001, 2017), this pedagogical approach goes beyond simple physical instruction, integrating the emotional, social, and physical dimensions into motor actions, thus offering a comprehensive framework for student development. The data from this study coincides with

previous research that points to motor praxeology as a powerful tool for improving coexistence in the school environment and interpersonal relationships (Izquierdo, 2022; Lavega-Burgués, 2018). By means of activities that combine cooperation and opposition, students not only increase their physical capacity but also learn to manage motor conflicts constructively, preparing themselves for their social integration. The incorporation of suggestions for the long-term sustainability of MCE, in accordance with the research by Luchoro-Parrilla et al. (2024), reinforces its suitability for being applied in various educational contexts. These results strengthen MCE as an effective educational strategy within physical education, which contributes to both individual growth and collective well-being.

Conclusions

This study demonstrates the positive impact of Motor Conduct Education (MCE) on school coexistence and students' socio-affective well-being. The findings confirm that MCE, implemented through cooperation-opposition motor situations centered on basketball, significantly reduces the subjective perception of motor conflicts compared to the Sport Education Model. This highlights MCE's potential to foster a more harmonious classroom environment and improve the management of conflicts arising from physical interaction.

Furthermore, the research reveals that MCE not only diminishes the occurrence of perceived conflicts but also enhances students' and potentially teachers' awareness of these situations. This increased awareness enables the implementation of more effective strategies for conflict resolution. The study underscores the value of basketball, with its inherent rules regulating physical contact, as an ideal context for applying MCE to promote cooperative competition and instill crucial coexistence values such as respect and responsibility.

While the study indicates that MCE benefits both sexes, it also identifies nuances in how male and female participants perceive conflict and experience emotional intensity following the intervention. Notably, the findings suggest that MCE is an equitable approach to enhancing coexistence, offering equal advantages to both male and female students. This has significant implications for promoting sex equality and managing diversity within physical education settings.

The findings also confirm that regulated competition, when embedded in an educational framework, can serve as a powerful tool for fostering conflict resolution skills. Basketball functioned not only as a sport but as a social learning environment, enabling the development of socio-affective competencies essential for positive coexistence.

Although this study yielded promising results, several limitations must be acknowledged. Conducted as a pilot project, this research involved a sample size limited to just one high school, which means the findings may not apply to other geographical or cultural settings. Additionally, the use of self-report questionnaires for measuring conflicts and emotions could have introduced bias, as the answers reflect the participants' personal subjective experiences. These limitations should be considered when interpreting the study's conclusions.

Subsequent research should seek to expand the scope of this study by including schools from diverse demographic and cultural backgrounds, to test the findings in varied conditions. As future lines of research, it would be interesting to evaluate the benefits of these pedagogies in long-term didactic sequences, as well as implement them in other sports.

This research offers important considerations for professionals in physical education, providing practical guidance on how to enhance both the social and emotional development of students through Motor Conduct Education (MCE). First, teachers can use MCE to create a more cooperative and less conflict-prone environment in their classrooms by incorporating structured activities, such as basketball, that balance cooperation and opposition. This approach helps to reduce motor conflicts while promoting positive emotional outcomes, such as improved emotional regulation and resilience.

Teachers are also encouraged to enhance students' awareness of conflict situations and teach strategies for effective conflict resolution. The study demonstrates that MCE increases students' ability to recognize and manage conflicts, equipping them with essential life skills that go beyond physical education. Additionally, MCE fosters sexes equality, as its benefits are equally applicable to both male and female

students, making it a valuable tool for promoting inclusivity and addressing gender dynamics in physical education settings.

Moreover, by integrating competition in a regulated and educational framework, teachers can cultivate socio-affective behaviors. The study suggests that well-managed competition not only improves physical performance but also enhances cooperation and positive social interactions among students.

Finally, the holistic nature of MCE, which integrates physical, emotional, and social dimensions, offers physical education teachers a comprehensive pedagogical approach that supports students' overall development. By implementing MCE, teachers can contribute to a more inclusive and harmonious scholar environment, promoting both individual well-being and a positive school culture.

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Authors and translators' details:

Paula Pla-Pla	paulapla@gencat.cat	Autor/a
Pere Lavega-Burgués	plavega@gencat.cat	Autor/a
Unai Sáez de Ocáriz Granja	usaez@gencat.cat	Autor/a