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Pedagogy of inclusive education and gender aspects of preventing aggressive behaviour among adolescents through physical activity: An integrative review

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Abstract. The rise in aggressive behaviour among adolescents remains one of the significant challenges facing contemporary educational systems and calls for the development of effective preventive strategies. Despite accumulating evidence of the positive impact of physical activity on behavioural regulation, inclusive and gender-sensitive approaches to preventing aggression through physical education remain insufficiently developed. The aim of this work was to conduct an integrative review of the literature from 2020-2025, synthesising data from systematic reviews and meta-analyses. The findings demonstrated that regular structured physical activity, embedded in a pedagogically organised environment incorporating elements of cooperative interaction, reflection, and sustained teacher support, contributes to a moderate reduction in levels of hostility, impulsivity, and interpersonal conflicts. The most pronounced preventive effect was observed in programmes focused on teamwork and emotional regulation, compared with unstructured or purely competitive forms. The review highlighted gender differences: boys more frequently exhibit overt physical aggression and participate more actively in organised activities, whereas girls tend towards relational or internalised aggression and face additional barriers to participation (sociocultural norms, declining interest during adolescence). Adolescents with disabilities, particularly girls, experience intersecting restrictions that limit their access to the protective potential of physical activity. The conclusions indicated the need to develop adapted forms of physical education and implement gender-sensitive strategies that include the cultivation of empathy, self-awareness, and social partnership. Such approaches strengthen psychosocial well-being and reduce the risks of deviant behaviour among adolescents with diverse educational needs. The practical significance lies in the potential for educators and inclusive

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education specialists to use these findings to create evidence-based preventive models aimed at fostering sustainable social interaction skills

Keywords: social inclusion; prevention of deviant behaviour; emotional regulation; gender vulnerability; adaptive physical activity; psychosocial development; adolescent well-being

■ INTRODUCTION

Adolescent aggression remains a persistent challenge for educational systems worldwide and has far-reaching consequences for mental health, academic achievement, and social integration. International monitoring data by WHO & HBSC (2024) indicated that peer violence and aggressive behaviour continue to affect a substantial proportion of adolescents, particularly within school environments. Contemporary research increasingly conceptualises adolescent aggression not merely as individual deviance, but as a behavioural response shaped by deficits in emotional regulation, limited social connectedness, and restricted opportunities for constructive social interaction (Darmadi & Badayai, 2021). Within this context, physical activity (PA) has gained growing recognition as a pedagogical resource for the prevention of aggressive behaviour. A substantial body of empirical evidence in the work by Y. Zhu *et al.* (2022) demonstrated that structured physical activity and school-based sports programmes are associated with reductions in aggressive and antisocial behaviour, while simultaneously supporting the development of prosocial skills and emotional self-regulation. Meta-analytic findings consistently confirm moderate and stable effects of PA on aggression-related outcomes across diverse adolescent populations. Nevertheless, despite this accumulating evidence, the translation of research findings into effective and equitable educational practice remains inconsistent.

One of the central challenges concerns the insufficient attention paid to the pedagogical conditions under which physical activity produces preventive effects. While systematic reviews and meta-analyses establish the overall efficacy of PA, they frequently offer limited insight into the specific pedagogical mechanisms involved, such as co-operative learning structures, guided reflection, or the role of teacher facilitation in shaping social behaviour (Shen *et al.*, 2024). As a result, physical activity is often implemented in educational settings primarily as a technical, fitness-oriented, or competitive component, rather than as a deliberately structured pedagogical intervention aimed at social-emotional development and behavioural regulation. A second major challenge relates to the principles of inclusive education. Preventive interventions targeting aggressive behaviour must be accessible and effective for all adolescents, including those with disabilities or special educational needs. Research by E. Saure *et al.* (2022), A. Rusillo-Magdalenio *et al.* (2024) demonstrated that adolescents with disabilities frequently encounter structural, social, and attitudinal barriers to participation in physical activity, which may intensify social exclusion and vulnerability to bullying and peer victimisation. Despite these findings, inclusive perspectives remain insufficiently integrated into

many studies examining the relationship between physical activity and aggression, and adolescents with disabilities are often underrepresented in intervention research.

Gender differences further complicate the implementation of preventive physical activity programmes. Empirical studies consistently show that boys and girls differ both in the expression of aggressive behaviour and in their patterns of participation in physical activity. Boys are more likely to display overt and physical forms of aggression, whereas girls more often experience relational or internalised forms of aggressive behaviour. At the same time, according to K. Duffey *et al.* (2021), I. Arumi-Prat *et al.* (2025), girls' participation in organised physical activity tends to decline during adolescence due to sociocultural norms, safety concerns, and limited access to gender-sensitive programmes. When these differences are not explicitly addressed, physical activity-based interventions risk reproducing existing inequalities rather than mitigating them. Taken together, these findings indicate a critical gap at the intersection of pedagogy, inclusion, and gender. Although previous studies have examined physical activity and aggression, inclusive practices in physical education, or gender differences in adolescent behaviour, these dimensions are most often addressed in isolation (Luo & Li, 2024; Yang *et al.*, 2024). There remains a lack of integrative analyses that examine how physical activity can be pedagogically designed to prevent aggression while simultaneously responding to inclusive and gender-related challenges.

The aim of this review was to identify the specific pedagogical conditions under which structured physical activity, delivered within inclusive educational settings, most effectively reduces aggressive behaviour in adolescents. Particular attention was given to the interplay between pedagogical design, gender differences in participation and outcomes, and the compounded barriers arising at the intersection of gender and disability. By adopting this integrative lens, the review sought to offer theoretically grounded recommendations for the development of gender-responsive and inclusive physical education programmes.

■ MATERIALS AND METHODS

This study was designed as an integrative review of the literature, synthesising existing empirical evidence and policy documents on the relationship between physical activity, aggressive behaviour, and inclusive education among adolescents. An integrative review approach was chosen to bring together findings from diverse sources, including systematic reviews, meta-analyses, and selected primary studies, while contextualising them within inclusive and gender-responsive educational frameworks. A structured

literature search was conducted mostly in the Scopus and Web of Science databases in 2024-2025. Search terms included combinations of “physical activity”, “sport”, “physical education”, “aggression”, “bullying”, “emotional regulation”, “adolescent”, “inclusion”, “disability”, and “gender”. Articles published between 2020 and 2025 were considered. The search initially yielded 487 records; after screening titles, abstracts, and full texts for relevance, a final set of key sources was selected for narrative synthesis (37 sources, including official documents).

Sources were included if they: (a) focused on adolescents (approximately 10-19 years); (b) examined physical activity or sport in relation to aggressive, antisocial, or bullying-related behaviours; and (c) addressed inclusion (disability/special educational needs) and/or gender dimensions. Systematic reviews, meta-analyses, primary empirical studies, and selected international policy reports (e.g., UNICEF, WHO) were prioritised. Key findings were extracted and organised thematically around three main dimensions: (1) pedagogical mechanisms linking physical activity to aggression prevention; (2) inclusive conditions and barriers to participation; (3) gender-related differences in outcomes and access. The synthesis was narrative, with emphasis on convergent findings across sources and contextual interpretation, including reference to the Kyrgyz educational context. To situate the international evidence, the review refers to the Law of the Kyrgyz Republic No. 179 “On Education” (2023) and the Concept for the Development of Inclusive Education in the Kyrgyz Republic for 2019-2023 (2019). These documents provide the normative framework for interpreting structural and implementation challenges in inclusive physical education. This review was based solely on publicly available published sources and required no ethical approval.

■ RESULTS AND DISCUSSION

Quantitative evidence from meta-analyses on physical activity and aggression reduction

The integrative review of the selected sources reveals a consistent and convergent body of evidence supporting the role of physical activity in the prevention of aggressive behaviour among adolescents. Beyond demonstrating overall effectiveness, the findings underscore that the preventive impact of physical activity is not uniform but depends on pedagogical design, contextual conditions, and individual characteristics of participants. The results are therefore presented as a narrative synthesis that integrates quantitative evidence from meta-analyses with findings from empirical studies and international policy documents. A substantial proportion of the reviewed literature provides quantitative evidence indicating that participation in physical activity is associated with a reduction in aggressive behaviour among adolescents. Systematic reviews and meta-analyses consistently report small to moderate effect sizes, suggesting that physical activity-based interventions can make a meaningful contribution to behavioural regulation when implemented within educational or community settings.

One of the most comprehensive meta-analyses, conducted by N. Ouyang & J. Liu (2023), demonstrates a moderate overall reduction in aggressive behaviour following structured physical activity interventions. Importantly, the strongest effects were observed for hostility-related outcomes, indicating that physical activity may be particularly effective in addressing the emotional and attitudinal dimensions of aggression. The authors further report that interventions lasting between eight and sixteen weeks yield more pronounced effects, highlighting the importance of sustained and systematically organised programmes rather than short-term or sporadic activities. Comparable conclusions are reported by Y. Zhu *et al.* (2022), whose meta-analysis focuses specifically on physical aggression. Their findings indicate that participation in physical activity is associated with a significant reduction in physically aggressive behaviours, with team-based activities producing stronger effects than individual forms of exercise. This pattern suggests that cooperative and socially interactive forms of physical activity may enhance preventive outcomes by fostering peer interaction, mutual responsibility, and shared goal attainment. Evidence from Y. Yang *et al.* (2023) further supports the effectiveness of sports-based interventions as a specific subtype of physical activity. Their meta-analysis shows that sports participation is associated with reduced aggression across adolescent populations, with larger effects observed in early adolescence. This age-related variation suggests that preventive physical activity interventions may be particularly effective when introduced before aggressive behaviour patterns become stable and habitual.

Beyond direct measures of aggression, several reviews identify emotional regulation as a central mediating mechanism. J. Li *et al.* (2022) report consistent improvements in emotional regulation across randomised controlled trials, indicating that physical activity supports the development of self-regulatory capacities that are closely linked to aggressive behaviour. These findings are consistent with broader evidence summarised by J. Wu *et al.* (2025), who demonstrate that physical activity interventions contribute to reductions in externalising problems within the wider context of adolescent mental health. Recent meta-analytic evidence further supports these findings. For instance, M. Carcelén-Fraile *et al.* (2025) reported a large significant effect of structured physical activity on emotional regulation in children and adolescents with neurodevelopmental disorders (Hedges' $g = -1.204$, $p < 0.001$), including reductions in aggression, anxiety, and behavioural problems. Similarly, Q. Fu *et al.* (2025) found moderate improvements in overall mental health (standardised mean difference (SMD) = 0.37), stress reduction (SMD = 0.86), and social competence (SMD = 0.56) among typically developing youth, highlighting PA's role in fostering psychosocial well-being.

Taken together, the quantitative evidence indicates that physical activity exerts a measurable and meaningful influence on aggressive behaviour among adolescents. At the

same time, variability in effect sizes across studies points to the decisive role of intervention characteristics, pedagogical structure, and contextual factors. These findings provide a clear rationale for examining how physical activity must be deliberately designed and pedagogically structured in order to maximise its preventive potential. The findings of

the reviewed meta-analyses indicate that physical activity is consistently associated with a moderate reduction in aggressive behaviour among adolescents. Across the analysed studies, effect sizes generally fall within the range of g /SMD -0.38 to -0.55, suggesting a stable and meaningful impact on both aggression and emotional regulation (Table 1).

Table 1. Quantitative effects of physical activity on aggression-related outcomes

Source (type)	Primary outcome	Overall effect size (95% CI)	Subgroup/moderator analysis	Key quantitative insight
N. Ouyang & J. Liu (2023) (SR/MA)	Total aggression	$g = -0.49$ [-0.61, -0.37]	Hostility: $g = -0.83$ [-1.12, -0.54]	Interventions of 8-16 weeks show moderate-to-large effects
Y. Zhu et al. (2022) (SR/MA)	Physical aggression	SMD = -0.53 [-0.79, -0.27]	Team vs. individual sports: $p < 0.05$	Cooperative PA contexts yield stronger effects
Y. Yang et al. (2023) (SR/MA)	Aggression (sports interventions)	SMD = -0.41 [-0.56, -0.26]	Larger effects in early adolescence	Sports are an effective PA subtype
L. Shen et al. (2024) (SR/MA)	School-based aggression	$g = -0.38$ [-0.50, -0.26]	Cognitive components: + 22% effect	Pedagogical design enhances outcomes
J. Li et al. (2022) (MA)	Emotional dysregulation	$g = -0.55$ [-0.70, -0.40]	RCTs only	Emotional regulation is a key mediator

Note: SR/MA – systematic review and meta-analysis; g – Hedges' g ; SMD – standardised mean difference; CI – confidence interval; RCT – randomised controlled trial

Source: compiled by the authors

The synthesis presented in Table 1 reinforces the argument that physical activity serves not only physiological but also psychosocial and moral functions within educational contexts. Across the reviewed meta-analyses, structured interventions consistently demonstrate moderate to large reductions in aggression-related outcomes, particularly when team-based or cooperative formats are employed over prolonged periods. These quantitative patterns align with broader evidence that physical activity promotes emotional regulation, self-control, and interpersonal tolerance, thereby acting as a preventive mechanism against aggressive behaviour in adolescents. However, effect sizes vary depending on programme design, duration, and participant characteristics, underscoring the need for pedagogically intentional implementation to maximise benefits in inclusive settings.

Pedagogical mechanisms shaping inclusive physical activity interventions

The analysis of empirical studies indicates that the preventive effects of physical activity on adolescent aggression depend not merely on participation itself, but largely on how physical activity is pedagogically structured within educational settings. Across the reviewed sources, physical activity emerges as an effective preventive tool primarily when it is embedded in a deliberately organised learning environment that supports social interaction, emotional regulation, and inclusive participation. One of the most consistently identified mechanisms is the use of cooperative learning formats in physical education and school-based sports. According to A. Lane (2025), activities built around shared goals, collective responsibility, and joint problem-solving create conditions that reduce interpersonal tension and aggressive responses. School sports

programmes that emphasise cooperation rather than competition are associated with lower levels of aggressive behaviour and fewer peer conflicts (Wang et al., 2025). This effect appears to be linked to the presence of social feedback loops, in which adolescents receive immediate responses from peers and teachers regarding acceptable behaviour. Such environments encourage negotiation, perspective-taking, and mutual accountability, which are central to the development of prosocial behaviour. T. Kaloudis et al. (2022) identify cooperative games and non-elimination activities as core elements of inclusive physical education, particularly for students who are vulnerable to exclusion or marginalisation. A second key pedagogical mechanism concerns the integration of social-emotional learning components into physical activity programmes. Multiple studies demonstrate that physical activity is more effective in reducing aggressive behaviour when it is combined with explicit opportunities to develop emotional awareness and self-regulation skills (Yue et al., 2025). Programmes that include structured reflection on emotional experiences during activities, guided discussions of conflict situations, or role-playing exercises focused on cooperation and fairness show stronger preventive effects than physical activity implemented in isolation. From a pedagogical perspective, this indicates that physical activity functions not simply as a means of energy expenditure, but as a context for experiential learning in which adolescents practice managing emotions and responding to social challenges in real time.

Complementary evidence from X. Wang et al. (2022) indicates that physical exercise yields a moderate reduction in depressive symptoms among adolescents (SMD = -0.64, $p < 0.01$), which often co-occurs with internalised forms of aggression. Moreover, H. Yu et al. (2024) demonstrated in a chain-mediated model that physical activity reduces

aggressive behaviour in young adults primarily through enhanced self-control (indirect effect 28.63%) and self-efficacy, underscoring the importance of reflective and supportive pedagogical practices in translating physiological benefits into behavioural regulation. Moreover, improvements in self-control and related psychological resources mediate the relationship between physical activity and reductions in aggression, underscoring the importance of intentional pedagogical design. Teacher competence and adaptive instructional practices represent a third central mechanism identified in the review. According to Á. Abós *et al.* (2021), the benefits of physical activity are closely linked to teachers' capacity to adapt tasks, manage group dynamics, and establish a supportive climate for all learners. Educators trained in inclusive pedagogical approaches are better equipped to modify activities according to students' abilities and to prevent situations in which exclusion, frustration, or misunderstanding may provoke aggressive responses. Importantly, teacher support extends beyond technical adaptation to include fostering respectful communication, modelling non-aggressive conflict resolution, and ensuring that all students experience a sense of belonging within the group. As noted by N. Pinchak (2024), a positive school climate – often shaped by teacher practices – is associated with lower levels of bullying and peer violence, highlighting the broader institutional relevance of pedagogical competence.

Taken together, these findings indicate that physical activity functions as an effective preventive intervention only when supported by coherent pedagogical strategies that prioritise cooperation, social-emotional learning, and inclusion. The reviewed evidence demonstrates that inclusive design is not an auxiliary component of physical activity programmes, but a foundational condition for their effectiveness. When pedagogical mechanisms are aligned with inclusive principles, physical activity contributes not only to the reduction of aggressive behaviour, but also to the strengthening of social relationships and the creation of a more supportive educational environment.

Gender-related differences in aggression and participation in physical activity

The reviewed literature consistently demonstrates that gender is a significant factor shaping both patterns of aggressive behaviour among adolescents and their engagement in physical activity. These differences manifest not only in the prevalence and forms of aggression, but also in how boys and girls access, experience, and benefit from physical activity-based interventions. Recognising these gender-related patterns is therefore essential for the development of preventive strategies that are both effective and equitable. Studies show that boys are more likely to exhibit overt and physically expressed forms of aggression, including direct confrontation, physical altercations, and rule-breaking behaviour (Roy & Jha, 2022). At the same time, boys generally participate in physical activity more frequently and with greater intensity, particularly within organised and

competitive sports contexts. This combination creates both preventive opportunities and potential risks. Structured physical activity can provide boys with a socially acceptable setting for channelling energy and developing behavioural self-regulation. However, when physical activity is organised predominantly around competition, dominance, and performance outcomes, it may inadvertently reinforce aggressive norms rather than reduce them. Evidence indicates that boys derive the greatest preventive benefit from programmes that deliberately emphasise cooperation, clearly defined rules, and guided reflection, rather than unregulated competitive interaction. Under these pedagogical conditions, participation in physical activity is associated with a measurable reduction in externalised aggressive behaviour. In contrast, girls tend to display different patterns of aggression, which are more often relational or internalised in nature. These may include social exclusion, indirect hostility, withdrawal, or emotional distress rather than physical confrontation. At the same time, studies consistently report a decline in girls' participation in physical activity during adolescence (WHO, 2022). This trend is commonly linked to socio-cultural barriers such as gender stereotypes, body image concerns, limited access to safe and appropriate spaces, and a lack of activity formats that correspond to girls' interests and social expectations. As a consequence, many girls are excluded from the potential protective effects of physical activity at a developmental stage characterised by heightened emotional vulnerability and social pressure.

The psychosocial benefits of physical activity for girls appear to differ in emphasis from those observed among boys. Rather than primarily reducing overt aggressive behaviour, participation in physical activity among girls is more strongly associated with improvements in emotional regulation, self-esteem, and overall psychological well-being. Systematic reviews indicate that engagement in physical activity contributes to lower levels of internalised symptoms, including anxiety and emotional dysregulation, which themselves constitute risk factors for indirect aggression and interpersonal conflict (Wu *et al.*, 2025). These findings suggest that physical activity serves a preventive function for girls by strengthening emotional resources and resilience, even when immediate behavioural changes are less visible. While sports participation is associated with reduced odds of aggressive behaviour among both boys and girls, the strength of this association tends to be greater for boys. This pattern does not imply that physical activity is less valuable for girls, but rather that its preventive effects operate through different mechanisms and are more sensitive to contextual and pedagogical conditions. Without intentional gender-responsive design, physical activity programmes may fail to address the specific barriers experienced by girls, thereby limiting their effectiveness.

J. Chapin & V. Warne (2020) reinforce the importance of gender-sensitive approaches within educational settings. They emphasise that equal access is not achieved simply by offering identical programmes to all students.

Instead, gender responsiveness involves diversifying activity formats, providing non-competitive or single-sex options where appropriate, ensuring the visibility of female role models, and actively challenging stereotypes that discourage girls' participation. When such measures are implemented, physical activity becomes a more inclusive and supportive space capable of addressing gender-specific patterns of aggression and vulnerability. Overall, the reviewed evidence indicates that gender functions as a critical moderating factor in both participation in physical activity and its preventive effects on aggressive behaviour. Programmes that fail to account for these differences risk reproducing existing inequalities, whereas gender-responsive designs enhance the capacity of physical activity to serve as a meaningful tool for aggression prevention and psychosocial development among adolescents.

Intersectional vulnerability of girls and adolescents with disabilities in physical activity contexts

The analysis of the reviewed literature indicates that the most pronounced forms of exclusion and vulnerability in the context of aggression prevention through physical activity emerge at the intersection of gender and disability. Adolescents who simultaneously belong to these social categories encounter overlapping structural, cultural, and pedagogical barriers that substantially limit their access to physical activity and, consequently, to its preventive benefits. Despite its significance, this intersectional dimension remains insufficiently addressed in many educational interventions. Girls with disabilities are consistently identified as one of the most marginalised groups within educational systems. International evidence points to cumulative disadvantages, including lower school attendance, limited participation in extracurricular activities, and heightened exposure to social exclusion (Mezzanotte, 2022). These factors significantly restrict opportunities for engagement in structured physical activity, which is increasingly recognised as a protective context for social development and aggression prevention. Reduced access to physical activity not only limits physical health outcomes but also constrains opportunities for peer interaction, emotional learning, and the development of self-regulation skills that are critical for mitigating aggressive behaviour.

This situation is often conceptualised as a form of "double invisibility". Gender norms often render girls' needs less visible within sports and physical education, while disability-related barriers further marginalise them within both mainstream and inclusive settings (Avraam & Anagnostou, 2025). This dual exclusion is particularly evident in the context of neurodevelopmental conditions. Research suggests that intellectual disability may attenuate typical gender differences in behavioural expression, including aggression, yet institutional practices and social expectations often continue to operate along gendered lines. As a result, assumptions about participation and behaviour may remain poorly aligned with the actual needs and capacities of these adolescents, reinforcing exclusion

rather than addressing it. Importantly, the barriers faced by adolescents with disabilities – especially girls – extend beyond issues of physical accessibility. Attitudinal factors play a substantial role, including low expectations regarding participation, overprotective practices driven by safety concerns, and persistent stigma related to both disability and female engagement in physical activity. These attitudes frequently result in limited or symbolic participation, where students are formally included in physical education settings but excluded from meaningful engagement. Such forms of passive inclusion may intensify feelings of frustration, social isolation, and vulnerability to peer aggression.

Pedagogical constraints further exacerbate these challenges. O. Ben Rakaa *et al.* (2025) highlighted insufficient teacher preparation in adaptive physical education and inclusive instructional strategies. In the absence of targeted training, educators may struggle to balance task adaptation with group cohesion, or to prevent situations in which frustration and disengagement increase the risk of aggressive responses. This gap between inclusive policy frameworks and everyday classroom practice significantly weakens the preventive potential of physical activity for adolescents whose needs require deliberate pedagogical adjustment. Findings by O. Jesina *et al.* (2022) also demonstrate that exclusion from sports and structured physical activity is associated with elevated risks of bullying and peer victimisation among adolescents with disabilities. This risk is particularly pronounced for girls, who are more likely to experience relational forms of aggression, such as social exclusion, verbal harassment, or indirect hostility. Limited access to supportive physical activity environments may therefore contribute to self-reinforcing cycles of marginalisation, in which exclusion increases vulnerability to aggression, further discouraging participation.

At the same time, as noted by M. Carcelén-Fraile *et al.* (2025), structured physical activity programmes designed to support executive functioning, emotional regulation, and social competence show positive effects among adolescents with neurodevelopmental disorders. Such programmes typically emphasise predictability, clear behavioural expectations, and consistent supportive feedback, creating conditions under which participation becomes both accessible and meaningful. In addition, the integration of adaptive physical activity components into mainstream curricula is increasingly highlighted as a necessary step toward aligning inclusive policy commitments with everyday educational practice. Overall, the findings indicate that effective aggression prevention through physical activity requires more than generalised inclusion strategies. Intersectional vulnerability necessitates targeted, context-sensitive interventions that explicitly account for the combined effects of gender and disability. When these dimensions are systematically addressed through adaptive pedagogy, supportive school climates, and inclusive institutional frameworks, physical activity can function as a powerful resource for reducing aggression and promoting psychosocial well-being among some of the most vulnerable adolescent populations.

Pedagogical and structural conditions for effective prevention

of aggressive behaviour through physical activity

The findings of this integrative review demonstrate that the preventive impact of physical activity-based interventions on aggressive behaviour among adolescents is significantly shaped by pedagogical specificity and broader contextual and structural conditions. Meta-analytic evidence consistently confirms a moderate but stable association between structured physical activity and reductions in aggressive behaviour (Zhu *et al.*, 2022; Ouyang & Liu, 2023; Yang *et al.*, 2023). However, the effectiveness of these interventions depends not merely on participation itself, but on deliberate pedagogical design. Structured programmes incorporating cooperative interaction, guided reflection, and explicit support for emotional regulation prove substantially more effective than unstructured or purely recreational activities. Cooperative formats, where success relies on shared goals and mutual responsibility, foster social accountability, perspective-taking, and non-aggressive conflict resolution. These elements align with established educational research on the role of structured social interaction in developing behavioural self-regulation during adolescence.

The integration of social-emotional learning processes further enhances outcomes. Interventions that combine physical activity with opportunities for emotional awareness, reflection, and self-control development outperform those focused solely on physical exertion. Improvements in emotional regulation emerge as a central mechanism linking physical activity to reduced aggression, providing adolescents with an embodied context for practising self-regulatory skills directly relevant to behavioural outcomes. Teachers play a pivotal mediating role. Competence in inclusive and adaptive pedagogy influences participation rates, group dynamics, and the overall social climate of physical activity settings. Educators skilled in structuring activities, adapting tasks, and managing heterogeneous groups create supportive environments that discourage aggression and promote cooperation. Conversely, limited pre-service and in-service training in inclusive pedagogy, adaptive physical education, and gender-sensitive approaches often leads to unintentional reinforcement of exclusionary practices or unequal participation (Zhou, 2024). Targeted professional development, therefore, is essential for building teachers' capacity to foster well-regulated, cooperative learning environments.

Broader contextual and structural factors further moderate implementation. Despite clear commitments to inclusion, equal access, and gender sensitivity in international and national policy frameworks (including physical education), a persistent gap exists between policy intentions and school-level realisation. Schools frequently lack adequate material resources, accessible infrastructure, specialised equipment, and sustained professional support, constraining their ability to enact inclusive and gender-responsive practices consistently. Resource scarcity particularly affects the adaptation of physical activity environments for diverse

learners, including adolescents with disabilities, where participation often depends on informal compensatory strategies rather than institutional provisions (Hidayat *et al.*, 2024). Without systemic investment in infrastructure and teacher preparation, inclusive practices remain fragile and reliant on individual effort. Taken together, these findings indicate that the preventive potential of physical activity is realised most fully when embedded within a coherent pedagogical framework supported by adequate structural conditions. Physical activity should therefore be conceptualised not as a standalone intervention, but as a pedagogically intentional space requiring reflective design, professional competence, and institutional alignment with inclusive educational principles.

Interpretation of findings

within the educational context of the Kyrgyz Republic

The national educational context further mediates the implementation of inclusive physical activity initiatives. In the Kyrgyz Republic, the Concept for the Development of Inclusive Education in the Kyrgyz Republic for 2019-2023 (2019) outlines priorities related to equal access, social integration, and support for learners with disabilities. Official data indicate a steady increase in registered children with disabilities (aged 0-17), rising from 20,660 in 2007 to 32,013 in 2019, representing approximately 1.3% of the child population (UNICEF, 2021). Despite this, access to inclusive education remains limited: in 2019, only 305 children with disabilities of school age attended mainstream schools, while non-governmental estimates suggest that less than one-third of children with disabilities have access to any form of schooling. These figures highlight persistent structural gaps in infrastructure and teacher preparation, which constrain the implementation of inclusive physical activity programmes as envisaged in national policy. Recent initiatives, such as the SmartEd Project (2025-2029) supported by UNICEF, the Islamic Development Bank, and the Global Partnership for Education, aim to address these barriers through the establishment of ten model inclusive schools and a National Roadmap for Inclusive Education (UNICEF, 2025). These constraints are not unique to Kyrgyzstan but reflect broader patterns observed in low- and middle-income educational systems, where policy ambitions often exceed available institutional capacities.

Interpreting the findings within the educational context of the Kyrgyz Republic reveals both conceptual alignment with international recommendations and substantial challenges at the level of implementation. The Concept for the Development of Inclusive Education in the Kyrgyz Republic for 2019-2023 (2019) articulates a clear commitment to social inclusion, equal access, and teacher professional development. These priorities correspond closely with the evidence synthesised in this review, particularly regarding the importance of inclusive pedagogy and supportive educational environments. The Law of the Kyrgyz Republic "On Education" (2023) establishes the legal foundation for inclusive education in the country. Chapter 11 (Articles 36-37)

explicitly defines inclusive education as a process ensuring equal opportunities for all learners, including those with special educational needs, without discrimination based on health status, disability, or other factors. It mandates reasonable accommodations, individualised support, and the integration of children with disabilities into mainstream settings wherever possible. These provisions align with the review's emphasis on pedagogical adaptation and barrier removal in physical education, as they require educators to create accessible environments that promote social interaction, emotional regulation, and psychosocial well-being – key mechanisms for reducing aggressive behaviour identified in the international literature.

At the same time, the findings indicate that the realisation of these principles in everyday school practice remains uneven. Physical education and school-based physical activity are areas where the gap between policy intention and practical implementation is especially visible, given their reliance on infrastructure, teacher preparation, and organisational support. The review suggests that physical activity holds significant potential as a space for social integration and aggression prevention within the Kyrgyz educational system, provided that it is aligned with inclusive and gender-responsive principles. Emphasising cooperative forms of movement and participation, rather than highly competitive models, may be particularly compatible with local educational conditions and resource constraints. Such approaches resonate with national policy goals related to social adaptation and interpersonal development. Overall, the national context underscores both the relevance of the review's findings and the necessity of contextual adaptation. Progress in aggression prevention through physical activity will depend on strengthening the connection between inclusive policy frameworks and everyday pedagogical practice.

In conclusion, this integrative review demonstrates that structured physical activity, when embedded in inclusive and gender-responsive pedagogical frameworks, holds considerable potential as a preventive tool against aggressive behaviour in adolescents. By fostering emotional regulation, social competence, and cooperative interaction, such programmes can contribute to safer and more equitable school environments. Realising this potential, however, requires overcoming persistent structural barriers through sustained investment in teacher preparation, accessible infrastructure, and policy-practice alignment. The findings thus call for a shift toward intentional, reflective, and inclusive approaches in physical education – an essential step toward supporting the psychosocial well-being and positive social development of diverse adolescent populations.

■ CONCLUSIONS

This integrative review clarifies the pedagogical conditions under which physical activity can function as an effective means of preventing aggressive behaviour among adolescents within inclusive educational settings. The analysis

demonstrated that the preventive potential of physical activity does not arise automatically from participation itself, but is contingent upon a constellation of pedagogical, social, and institutional factors that shape how physical activity is experienced by diverse groups of learners. The central contribution of this study lies in demonstrating that physical activity becomes a meaningful preventive tool only when it is intentionally designed to support socio-emotional development. Cooperative interaction, guided reflection, and adaptive task design emerge as key mechanisms through which physical activity contributes to emotional regulation, social competence, and reductions in aggressive behaviour. In the absence of such pedagogical structuring, physical activity risks remaining a neutral or unevenly effective practice, benefitting primarily those adolescents who already possess greater access, confidence, or social capital.

The findings further underscored the importance of accounting for gender-related differences in both the expression of aggressive behaviour and access to physical activity. Adolescents do not engage with physical activity in uniform ways, and gender norms, cultural expectations, and institutional arrangements significantly shape participation patterns and outcomes. The review demonstrated that ignoring these differences may limit the preventive effects of physical activity, whereas gender-responsive approaches enhance both its relevance and inclusivity. Particular attention was drawn to the compounded vulnerability of adolescents who experience overlapping forms of disadvantage, especially girls with disabilities. The evidence indicates that intersectional barriers related to gender and disability continue to restrict access to physical activity and increase exposure to social exclusion and peer aggression. Addressing these barriers requires more than formal inclusion policies; it demands consistent pedagogical adaptation, supportive school climates, and sustained institutional commitment to inclusive practice.

Overall, the study highlighted a persistent gap between inclusive education policies and their realisation in everyday school contexts. Bridging this gap is essential for fully realising the preventive potential of physical activity. This necessitates a shift away from predominantly competitive models of physical education toward approaches that prioritise cooperation, accessibility, and social learning, alongside systematic investment in teacher preparation and professional development. Future research should build on these findings through longitudinal and participatory studies conducted within specific national and regional contexts, including Central Asia. Such research would allow for a more nuanced understanding of how inclusive and gender-responsive physical activity practices influence not only aggressive behaviour, but also broader indicators of psychosocial well-being, social inclusion, and educational engagement among adolescents.

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Инклюзивдүү билим берүүнүн педагогикасы жана өспүрүмдөрдүн агрессивдүү жүрүм-турумун дене тарбия аркылуу алдын алуунун гендердик аспектилери: интегративдик карап чыгуу

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Аннотация. Өспүрүмдөрдүн арасында агрессивдүү жүрүм-турумдун өсүшү заманбап билим берүү системаларынын маанилүү көйгөйлөрүнүн бири бойдон калууда жана натыйжалуу алдын алуу стратегияларын иштеп чыгууну талап кылат. Физикалык активдүүлүктүн жүрүм-турумду жөнгө салууга оң таасиринин топтолгон далилдерине карабастан, физикалык тарбия каражаттары менен агрессияны алдын алууда инклюзивдүү жана гендерге сезимтал ыкмалар жетишсиз иштелип чыккан. Бул иштин максаты – 2020-2025-жылдардагы адабияттардын интегративдик карап чыгуусун жүргүзүү, системалуу карап чыгуулардын жана мета-анализдердин маалыматтарын жалпылоо. Натыйжалар көрсөткөндөй, кооперативдик өз ара аракеттенүү, рефлексия жана педагогдун туруктуу колдоосу элементтери менен педагогикалык жактан уюштурулган чөйрөгө киргизилген үзгүлтүксүз структураланган физикалык активдүүлүк кастыктын, импульсивдүүлүктүн жана адамдар аралык чыр-чатактардын деңгээлин орточо төмөндөтүүгө салым кошот. Эң айкын профилактикалык эффект командалык ишке жана эмоционалдык жөнгө салууга багытталган программаларда байкалды, структураланбаган же таза атаандаштык формаларына салыштырмалуу. Карап чыгуу гендердик айырмачылыктарды баса белгиледи: балдар көбүнчө ачык физикалык агрессияны көрсөтүп, уюшкан сабактарга активдүү катышат, ал эми кыздар реляциялык же ички агрессияга ыктап, катышууга кошумча тоскоолдуктарга дуушар болушат (социалдык-маданий нормалар, өспүрүм куракта кызыгуунун төмөндөшү). Майыптыгы бар өспүрүмдөр, өзгөчө кыздар, жыныс менен майыптыктын кесилишиндеги чектөөлөрдү баштан кечиришет, бул физикалык активдүүлүктүн коргоочу потенциалына жетүүнү төмөндөтөт. Алынган жыйынтыктар адаптацияланган физикалык тарбия формаларын иштеп чыгуунун жана эмпатияны, өзүн-өзү аңдоону жана социалдык өнөктөштүктү өнүктүрүүнү камтыган гендерге сезимтал стратегияларды киргизүүнүн зарылдыгын күбөлөндүрөт. Мындай ыкмалар ар түрдүү билим берүү муктаждыктары бар өспүрүмдөрдүн психосоциалдык жыргалчылыгын бекемдеп, девианттык жүрүм-турум коркунучтарын азайтат. Практикалык мааниси педагогдорго жана инклюзивдүү билим берүү адистерине илимий негизделген профилактикалык моделдерди түзүү үчүн натыйжаларды колдонуу мүмкүнчүлүгүндө турат, алар туруктуу социалдык өз ара аракеттенүү көндүмдөрүн калыптандырууга багытталган

Негизги сөздөр: социалдык инклюзия; девианттык жүрүм-турумдун алдын алуу; эмоцияларды жөнгө салуу; гендердик аярлуулук; адаптивдүү физикалык активдүүлүк; психосоциалдык өнүгүү; өспүрүмдөрдүн жыргалчылыгы

Педагогика инклюзивного образования и гендерные аспекты профилактики агрессивного поведения подростков средствами физической активности: интегративный обзор

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Аннотация. Рост агрессивного поведения среди подростков остается одной из значимых проблем современных образовательных систем и требует разработки эффективных профилактических стратегий. Несмотря на накопленные доказательства положительного влияния физической активности на регуляцию поведения, инклюзивные и гендерно-чувствительные подходы к профилактике агрессии средствами физического воспитания недостаточно разработаны. Цель работы – провести интегративный обзор литературы 2020-2025 годов, обобщающий данные систематических обзоров и мета-анализов. Результаты показали, что регулярная структурированная физическая активность, встроенная в педагогически организованную среду с элементами кооперативного взаимодействия, рефлексии и устойчивой поддержки педагога, способствует умеренному снижению уровня враждебности, импульсивности и межличностных конфликтов. Наиболее выраженный профилактический эффект наблюдался в программах, ориентированных на командную работу и эмоциональную регуляцию, по сравнению с неструктурированными или чисто соревновательными формами. Обзор подчеркнул гендерные различия: мальчики чаще демонстрируют открытую физическую агрессию и активнее участвуют в организованных занятиях, в то время как девочки склонны к реляционной или интериоризованной агрессии и сталкиваются с дополнительными барьерами участия (социокультурные нормы, снижение интереса в подростковом возрасте). Подростки с инвалидностью, особенно девочки, испытывают пересекающиеся ограничения, что снижает их доступ к защитному потенциалу физической активности. Полученные выводы свидетельствуют о необходимости разработки адаптированных форм физического воспитания и внедрения гендерно-чувствительных стратегий, включающих развитие эмпатии, самосознания и социального партнёрства. Такие подходы способствуют укреплению психосоциального благополучия и снижению рисков девиантного поведения у подростков с различными образовательными потребностями. Практическая значимость заключается в возможности использования результатов педагогами и специалистами инклюзивного образования для создания научно обоснованных профилактических моделей, направленных на формирование устойчивых навыков социального взаимодействия.

Ключевые слова: социальная инклюзия; профилактика девиантного поведения; эмоциональная регуляция; гендерная уязвимость; адаптивная физическая активность; психосоциальное развитие; благополучие подростков