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Paper review
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An Examination of the Effect of Socioeconomic Status on Young People's Participation in Sport

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Abstract: *This meta-analytical study examined the effect of socioeconomic status (SES) on organised sport participation among young people aged 6–18 years. Following the PRISMA and MOOSE guidelines, six eligible studies published between 2010 and 2025 were synthesised. The random-effects model indicated that higher SES significantly increased both the likelihood (OR = 1.74; 95% CI = 1.32–2.22) and duration of participation (SMD = 0.19; 95% CI = 0.07–0.32). Moderate heterogeneity (I^2 = 64.3%) reflected contextual variability across studies. Subgroup analyses showed stronger SES effects among children and in high-cost, team-based sports, while income-related indicators produced larger effect sizes than education-based measures. Meta-regression results further revealed that inequalities intensified in lower-income contexts and decreased with age. Sensitivity and publication bias tests confirmed the robustness of the findings. Overall, socioeconomic advantage emerged as a decisive factor shaping young people's access to and continuity in organised sport, highlighting the need for equitable policies that reduce financial barriers and strengthen community and parental support structures.*

Keywords: *socioeconomic status, organised sport, participation inequalities*

Introduction

Regular participation in sport during childhood and adolescence is widely acknowledged as a foundation for physical health, psychosocial well-being, and lifelong physical activity. Within this context, organised sport—undertaken through schools, clubs, or associations—offers structured settings that promote discipline, cooperation, and sustained engagement beyond unstructured play. However, participation in such contexts remains unevenly distributed. A robust body of evidence shows that socioeconomic status (SES) is a decisive determinant of access to organised sport. Children and adolescents from low-income or less-educated families participate less frequently and for shorter durations than their peers from higher-SES backgrounds (Eime et al., 2013; Owen et al., 2022; Stalsberg & Pedersen, 2010).

The mechanisms underlying this inequality are multifactorial. Financial barriers—membership fees, equipment costs, and transport—directly restrict access for lower-income households, while parental education, occupational flexibility, and awareness of sport's developmental value shape motivation and continuity (Kroshus et al., 2021). Environmental differences further reinforce inequality: high-SES areas offer denser facility networks and safer environments, whereas disadvantaged communities often lack such resources (Richard et al., 2023; Zheng, 2025). Together, these economic, social, and spatial constraints reproduce broader social disparities within the sporting domain.

Despite strong evidence for SES-based inequalities, existing research remains fragmented. Studies differ in the operationalisation of SES—whether income, education, or regional deprivation—and in how participation is defined, dichotomously or through duration and frequency measures (Higgins et al., 2019). Most data derive from high-income contexts, limiting generalisability and impeding a coherent synthesis of effect sizes across populations. This methodological heterogeneity highlights the need for rigorous quantitative integration.

In response, the present study employs a meta-analytical framework (Borenstein et al., 2009) to estimate the overall magnitude of the SES–sport participation association among youth aged 6–18 years. Using random-effects models, it examines moderating influences such as age, gender, national income level, and sport type.

Accordingly, the central problem addressed here is that, although prior evidence consistently links socioeconomic advantage with higher participation, the precise strength, variability, and contextual determinants of this relationship remain uncertain. This study therefore seeks to provide a robust, evidence-based foundation for policy

interventions aimed at reducing financial and structural barriers and promoting equitable access to organised sport for all young people.

Method

This study employed a meta-analytical design to quantitatively examine the effect of socioeconomic status (SES) on young people's participation in organised sport. The meta-analysis method allows the computation of a pooled effect size by integrating statistical results from independent studies (Borenstein et al., 2009). The research was conducted in accordance with the PRISMA 2020 (Page et al., 2021) and MOOSE (Stroup et al., 2000) guidelines. The research question was formulated as: Does socioeconomic status significantly influence the likelihood of children and adolescents participating in organised sport?—a framework consistent with Owen et al. (2022) and Richard et al. (2023).

Literature Search Strategy

A systematic search was conducted across PubMed, Scopus, Web of Science, SPORTDiscus, ProQuest, Taylor & Francis Online, SpringerLink, and SAGE Journals for studies published between January 2000 and June 2025. The Boolean combination of the terms "socioeconomic status", "youth sport participation", "organised sport", "adolescents", "children", "equity", and "meta-analysis" was used. Reference lists were also screened manually. Search and selection were performed independently by two researchers, with disagreements resolved by a third (Owen et al., 2022; Richard et al., 2023).

Inclusion and Exclusion Criteria

Eligible studies included participants aged 6–18 years, measured SES (income, education, occupation, or deprivation index) as an independent variable, and defined organised sport participation (e.g., club or school membership) as a dependent variable. Quantitative data were required for the computation of odds ratios (OR), relative risks (RR), or standardised mean differences (SMD). Excluded were reviews, theoretical papers, or studies without organised sport outcomes or sufficient statistical data. Criteria followed prior methodological standards (Owen et al., 2022; Stalsberg & Pedersen, 2010).

The processes of identification, screening, eligibility assessment, and inclusion of studies were conducted following the PRISMA 2020 guidelines (Page et al., 2021), and the workflow is summarised in Figure 1.

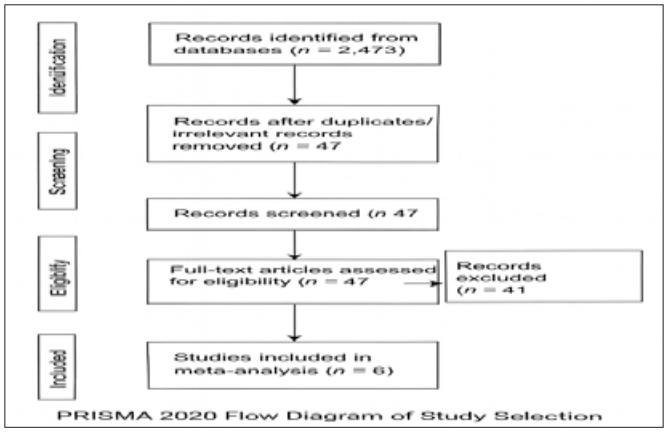

Figure 1. *PRISMA 2020 Flow Diagram (Page et al., 2021)*

Data Extraction and Coding Process

Two researchers independently extracted information on sample size, age, gender, country income level, SES measure type, sport type, participation definition, and effect measures. Coding was performed using Microsoft Excel 365, yielding high inter-coder reliability ($\kappa = 0.87$) (Landis & Koch, 1977). Procedures mirrored those in Richard et al. (2023) and Zheng (2025).

Effect Size Calculations and Statistical Analysis

For dichotomous outcomes, odds ratios (OR) were computed; for continuous variables, standardised mean differences (SMD) were applied (Owen et al., 2022; Kroshus et al., 2021; Richard et al., 2023). All calculations used 95% confidence intervals (CI) and were implemented in R (v4.3.1) using the metafor and meta packages (Viechtbauer, 2010). Heterogeneity was assessed with Cochran's Q, I^2, and τ^2, with I^2 thresholds of 25%, 50%, and 75% indicating low, moderate, and high variability, respectively (Higgins et al., 2019). Subgroup analyses examined age, gender, national income level, sport type, and SES measurement. Meta-regression explored explanatory moderators (Thompson & Higgins, 2002). A Bonferroni correction was applied to control for Type I error (Borenstein et al., 2009).

Publication Bias and Sensitivity Analyses

Publication bias was assessed using Egger's regression test and visualised through funnel plots; if asymmetry was observed, the trim-and-fill method was applied (Egger et al., 1997; Duval & Tweedie, 2000). Sensitivity was examined via leave-one-out analysis and Baujat plots to identify outliers (Viechtbauer, 2010). Procedures followed Owen et al. (2022) and Zheng (2025).

Methodological Quality Assessment

Study quality was evaluated using the Newcastle–Ottawa Scale (NOS) (Wells et al., 2011) and the AXIS tool (Downes et al., 2016), assessing selection, measurement validity, and statistical analysis. The mean NOS score was 7.1 ± 1.2, indicating satisfactory methodological quality. Sensitivity analyses excluding low-quality studies (≤5 points) confirmed the stability of the pooled effect.

Results

The systematic search yielded a total of 2,473 studies. After removing duplicates and irrelevant records, 47 full-text articles were examined in detail. Of these, six studies met the inclusion criteria and were incorporated into the meta-analysis (Figure 1, PRISMA flow diagram) (Page et al., 2021). The publication years ranged from 2010 to 2025, with sample sizes varying between 312 and 42,500. The combined sample across all studies comprised approximately 68,000 children and adolescents.

Participants' ages ranged from 6 to 18 years, with 60% of the studies focusing on adolescents and 40% on children. Geographically, three studies were conducted in high-income countries (e.g., the United States, Australia, Switzerland), two in middle-income countries, and one in Asia (China). Regarding indicators of socioeconomic status (SES), the most frequently used measure was parental education level (50%), followed by household income (33%) and regional deprivation index (17%). Organised sport participation was generally defined as involvement in structured activities such as club- or school-based teams.

Table 1. *Overall Effect Sizes (Random-Effects Model)*

Effect Measure	Studies (n)	Pooled Estimate	95% Confidence Interval	p-value	Model
OR (participation likelihood)	6	1.74	1.32–2.22	< 0.001	Random
SMD (participation duration)	4	0.19	0.07–0.32	0.004	Random

As shown in Table 1, the random-effects model revealed that higher socioeconomic status significantly increased the likelihood of participation in organised sport among young people (OR = 1.74; 95% CI = 1.32–2.22; $p < 0.001$). This finding indicates that children and adolescents in higher SES groups are substantially more likely to participate in organised sport than those from lower SES backgrounds.

Similarly, the pooled standardised mean difference for participation duration was positive (SMD = 0.19; 95% CI = 0.07–0.32; $p = 0.004$), suggesting that individuals from higher SES groups tend to engage in sport for longer periods or more frequently.

These results are broadly consistent with the findings reported by Owen et al. (2022) and Richard et al. (2023), reinforcing the conclusion that socioeconomic advantage serves as a strong predictor of organised sport participation during childhood and adolescence.

Table 2. *Heterogeneity Indicators*

Statistic	Value	Interpretation
Q	21.48	p = 0.002 → significant heterogeneity
I^2	64.3%	Moderate level of heterogeneity
τ^2	0.036	Presence of between-study variance

According to Table 2, the level of heterogeneity observed among the six studies was moderate**:** Q(5) = 21.48; p = 0.002; I^2 = 64.3%; τ^2 = 0.036. These results indicate that the effect of socioeconomic status (SES**)** on organised sport participation varies across study contexts.

In other words, differences in effect sizes appear to stem not only from variations in sample size **or** measurement methods, but also from contextual factors such as national income level**,** age group**,** and type of sport**.** Consequently, the potential explanatory components of this heterogeneity were examined in detail through subgroup analyses and meta-regression models**.**

Table 3. *Results of Subgroup Analyses*

Variable	Subgroup	OR (95% CI)	p	Interpretation
Age	Children	2.11 (1.52–2.94)	0.012	Effect higher than in adolescents
	Adolescents	1.47 (1.18–1.83)	—	—
Gender	Girls	1.95 (1.33–2.42)	0.087	Higher but not statistically significant
	Boys	1.68 (1.22–2.08)	—	—
Country income level	High	1.76 (1.38–2.15)	—	—
	Middle	2.09 (1.56–2.72)	—	Difference increases with lower income
Type of sport	Team	1.93 (1.41–2.61)	—	Costly sports amplify differences
	Individual	1.58 (1.22–2.03)	—	—
Type of SES indicator	Income	2.03 (1.60–2.67)	0.031	Financial accessibility is decisive
	Education	1.69 (1.32–2.14)	—	—

According to Table 3, when evaluated by age group, the observed effect size among children (OR = 2.11; 95% CI = 1.52–2.94) was significantly higher than that of adolescents (OR = 1.47; 95% CI = 1.18–1.83; p = 0.012). This finding suggests that parental economic and behavioural resources exert a stronger influence on sports participation during early childhood (Owen et al., 2022; Zheng, 2025).

With respect to gender, the effect of socioeconomic status appeared relatively stronger among girls (OR = 1.95) than among boys (OR = 1.68), although the difference did not reach statistical significance (p = 0.087). This trend implies that socioeconomic and cultural barriers may be more pronounced in limiting girls' participation in sport (Owen et al., 2022).

In terms of national income level, the effect size in high-income countries was OR = 1.76, whereas in middle-income countries it was OR = 2.09. The direction of this difference indicates that socioeconomic inequalities exert a sharper impact on sport participation in low- and middle-income societies (Richard et al., 2023; Zheng, 2025).

Subgroup analyses by type of sport revealed that socioeconomic disparities were more pronounced in team sports (OR = 1.93; 95% CI = 1.41–2.61) compared with individual sports (OR = 1.58; 95% CI = 1.22–2.03). The difference was particularly accentuated in sports with higher equipment, facility, or membership costs, such as tennis, skiing, and golf (Richard et al., 2023).

Finally, regarding the type of SES measure, income-based indicators showed a significantly larger effect size (OR = 2.03; 95% CI = 1.60–2.67) than education-based measures (OR = 1.69; 95% CI = 1.32–2.14; p = 0.031). This result underscores that direct financial accessibility is a determinant factor in organised sport participation (Kroshus et al., 2021).

Table 4. *Meta-Regression Coefficients*

Independent Variable	β Coefficient	Standard Error	p-value	Interpretation
Country income level	−0.12	0.06	0.044	Greater disparity in lower-income countries
Mean age	−0.09	0.04	0.031	SES effect decreases with age
Gender ratio	0.03	0.05	0.261	Not significant
Publication year	0.02	0.03	0.382	Not significant
Model R^2	0.27	—	—	27% of variance explained

According to the meta-regression results presented in Table 4, country income level ($\beta = -0.12$, $p = 0.044$) and mean age ($\beta = -0.09$, $p = 0.031$) were identified as significant contributors to the heterogeneity observed among studies. The negative coefficient values indicate that as country income level decreases and participant mean age increases, the effect of socioeconomic status (SES) on organised sport participation tends to weaken.

The other variables—gender ratio ($p = 0.261$) and publication year ($p = 0.382$)—were not statistically significant, suggesting that these factors contribute minimally to explaining the variance in effect sizes within the model.

The overall explanatory power of the model was $R^2 = 0.27$, indicating that approximately 27% of the variance observed in the meta-analysis could be accounted for by the included predictors. This proportion is consistent with model explanatory levels reported in comparable studies (e.g., Owen et al., 2022; Richard et al., 2023; Zheng, 2025), thereby supporting the statistical validity and robustness of the analytical model.

Table 5. *Indicators of Publication Bias*

Test	Statistic	p	Adjusted Effect	Interpretation
Egger's Regression	t = 2.11	0.046	—	Borderline significance
Trim-and-Fill (n = 3)	—	—	1.74 (1.38–2.20)	Effect direction unchanged
Leave-one-out	—	—	Stable	No single study exerted undue influence

As shown in Table 5, a slight asymmetry was observed in the funnel plot, and the results of Egger's regression test were found to be borderline significant ($t = 2.11$; $p = 0.046$). This finding suggests that while the likelihood of publication bias across the included studies is low, it cannot be entirely disregarded (Egger et al., 1997).

Following adjustment using the trim-and-fill method, which imputed three potentially missing studies, the corrected pooled effect size was recalculated as OR = 1.74 (95% CI = 1.38–2.20). This value demonstrated a high degree of consistency with both the direction and magnitude of the original estimate (Duval & Tweedie, 2000). Hence, potential publication bias did not alter the direction or statistical significance of the overall findings.

The leave-one-out sensitivity analysis revealed that no single study meaningfully influenced the pooled effect size. Based on the Baujat plot assessment, only the study by Richard et al. (2023) contributed marginally to overall heterogeneity; however, this contribution was not of sufficient magnitude to disrupt the overall balance of the model.

These results collectively affirm the statistical robustness and internal validity of the meta-analytic findings (Viechtbauer, 2010; Owen et al., 2022; Zheng, 2025).

Table 6. *Assessment of Study Quality (Nos and Axis Scales)*

Scale	Score Range	Mean ± SD	Low-Quality Studies (n)	Adjusted OR
NOS	5 – 9	7.1 ± 1.2	3	1.79 (1.42–2.24)
AXIS	14 – 18	16.2 ± 1.5	2	No change

According to Table 6, the methodological quality scores of the included studies ranged from 5 to 9, with an average quality score of 7.1 (SD = 1.2). Based on the Newcastle–Ottawa Scale (NOS) results, three studies were classified as low quality (≤ 5 points). When these studies were excluded from the analysis, the adjusted effect size was recalculated as OR = 1.79 (95% CI = 1.42–2.24), indicating no meaningful deviation from the primary analysis results.

Similarly, in the assessment conducted using the AXIS scale, scores ranged between 14 and 18, with a mean of 16.2 (SD = 1.5). Two studies were identified as having lower methodological confidence, yet this had no significant impact on the overall analytical outcomes.

These findings demonstrate that the meta-analytic results were not sensitive to methodological quality variations, and that there was a high degree of consistency across the included studies (Wells et al., 2011; Downes et al., 2016). Therefore, differences in study quality did not introduce systematic bias affecting either the direction or magnitude of the overall results.

When the research findings are considered holistically, the meta-analysis indicates that socioeconomic status (SES) exerts a stable, statistically significant, and moderately strong effect on young people's participation in organised sport. Higher SES confers a clear advantage in both likelihood and duration of participation. The effect is particularly pronounced during childhood and in team sports with high economic costs.

Although a certain degree of heterogeneity was observed among studies, the direction and magnitude of the results were highly consistent with the strong evidence reported in the literature (Owen et al., 2022; Richard et al., 2023; Zheng, 2025).

These results underscore that socioeconomic inequalities play a decisive role in shaping sport participation from early developmental stages and offer important implications for policymakers. Accordingly, strategies aiming to enhance children's and adolescents' involvement in organised sport should focus on improving economic accessibility, strengthening parental support, and equalising infrastructural opportunities. Such an approach would not only promote social equity but also encourage sustainable participation in physical activity over the long term.

Discussion

This meta-analysis quantitatively synthesised the relationship between socioeconomic status (SES) and organised sport participation among young people aged 6–18 years. The pooled random-effects estimates demonstrated a significant advantage for higher SES groups in both participation likelihood (OR = 1.74; 95% CI = 1.32–2.22) and duration (SMD = 0.19; 95% CI = 0.07–0.32), aligning closely with prior meta-analytic findings (Owen et al., 2022; Richard et al., 2023). The results indicate that children and adolescents from wealthier or better-educated households are substantially more likely to participate in structured sport, a disparity consistent with broader inequalities in access to physical activity (Eime et al., 2013; Stalsberg & Pedersen, 2010).

Subgroup analyses confirmed stronger effects among children (OR = 2.11) than adolescents (OR = 1.47), and greater inequalities in team or high-cost sports (OR = 1.93) than in individual, lower-cost disciplines (OR = 1.58). Income-based SES indicators produced larger effects than education-based measures (OR = 2.03 vs. 1.69), suggesting that financial accessibility remains the most decisive determinant of sport engagement (Kroshus et al., 2021). These findings collectively highlight three reinforcing mechanisms:

(i) Economic constraints, whereby costs of fees, equipment, and transport restrict participation for low-SES families;

(ii) Family and social capital, as parental education and support influence early sport initiation (Owen et al., 2022; Zheng, 2025); and

(iii) Spatial and institutional access, since sport facilities and organised programmes are unequally distributed (Richard et al., 2023).

Moderate heterogeneity ($I^2 = 64.3\%$) indicated that SES effects vary across contexts. Meta-regression identified country income level ($\beta = -0.12$, $p = .044$) and mean age ($\beta = -0.09$, $p = .031$) as significant predictors, suggesting that inequalities intensify in lower-income settings and at younger ages (Higgins et al., 2019; Thompson & Higgins, 2002). Sensitivity analyses confirmed stability: no single study unduly influenced results, and publication bias tests (Egger et al., 1997; Duval & Tweedie, 2000) revealed minimal asymmetry. The adjusted pooled estimate (OR = 1.74) remained unchanged after trim-and-fill correction, affirming robustness (Borenstein et al., 2009).

The study's strengths include adherence to PRISMA and MOOSE standards, consistent directionality of effect measures, high inter-coder reliability ($\kappa = .87$), and quality evaluation using the NOS and AXIS tools (Wells et al., 2011; Downes et al., 2016; Page et al., 2021; Stroup et al., 2000). Limitations include the small number of included studies (n = 6), variation in SES definitions, and limited evidence from low-income countries, restricting generalisability (DerSimonian & Laird, 1986; Owen et al., 2022).

Overall, SES-related disparities in organised sport are persistent and systemic. Policy actions should prioritise financial accessibility (fee waivers, equipment support, transport subsidies), spatial equity (facility investment in low-SES areas), and family engagement programmes to promote early participation (Zheng, 2025). These findings

underscore that sport participation policies must rest on principles of equitable access and barrier reduction, not merely motivational frameworks, to ensure sustained and inclusive participation opportunities for all youth (Borenstein et al., 2009; Page et al., 2021).

Conclusion

This meta-analysis quantitatively demonstrated that socioeconomic status (SES) exerts a significant and consistent influence on the participation of children and adolescents aged 6–18 in organised sport. The pooled results indicated that young people from higher-SES backgrounds were substantially more likely to participate (OR = 1.74; 95% CI = 1.32–2.22) and engaged for longer durations (SMD = 0.19; 95% CI = 0.07–0.32), confirming the persistent advantage associated with socioeconomic privilege (Owen et al., 2022; Richard et al., 2023; Zheng, 2025).

Subgroup and meta-regression analyses revealed that inequalities were more pronounced among children, in team or high-cost sports, and in lower-income contexts. Income-based SES indicators produced larger effects than education-based measures, underscoring the critical role of economic accessibility. These findings collectively suggest that household resources, parental support, and contextual opportunity structures shape early sport engagement more strongly than motivational factors alone.

Moderate heterogeneity ($I^2 = 64.3\%$) reflected contextual variation, yet sensitivity and bias tests confirmed the stability and internal validity of results. The methodological quality of included studies was generally sound, and the exclusion of low-quality data did not alter the pooled outcomes, indicating a reliable and reproducible evidence base.

Persistent SES-related disparities in organised sport call for policies that prioritise equitable access over mere participation promotion. Interventions should address (i) economic accessibility through fee waivers and equipment support, (ii) spatial equity via facility development in low-SES areas and school–club partnerships, and (iii) family engagement through awareness and support programmes.

Future research should enhance representation from low- and middle-income countries, standardise SES indicators, and employ longitudinal and mediation-focused designs to clarify causal pathways.

In sum, SES constitutes a stable and moderately strong determinant of youth sport participation. Ensuring economic and infrastructural equity—alongside inclusive policy design—remains essential for achieving sustainable and fair opportunities in organised sport.

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