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Impact of Facility Accessibility and Program Availability on Sport Participation Rates Across Socioeconomic Groups

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Abstract
This study investigates the impact of facility accessibility and program availability on sport participation rates across different socioeconomic groups, using a descriptive-correlational research design. A total of 600 participants from urban and suburban areas were surveyed and categorized into low, middle, and high socioeconomic status (SES) based on income, education, and employment. Facility accessibility was evaluated through a composite index including proximity to facilities, availability of public transportation, and physical accessibility features such as ramps and parking. Program availability was measured by the diversity, frequency, and inclusiveness of sport programs offered by local facilities. The findings revealed that compared to individuals in the high-SES group, those in the low-SES group were significantly less likely to participate in sport (OR = 0.22, 95% CI: 0.11–0.44, $p < 0.001$), even after controlling for access and programme factors. Facility accessibility was positively associated with participation (OR = 1.76, 95% CI: 1.41–2.21, $p < 0.001$), as was programme availability (OR = 1.88, 95% CI: 1.52–2.32, $p < 0.001$). These results emphasize the necessity of improving equitable access to sport facilities and expanding diverse programming, particularly targeting low SES communities. Policymakers and sports organizations should prioritize investments in infrastructure and tailored programs to reduce participation gaps and promote health and social benefits associated with regular sport engagement.

Keywords: Facility Accessibility, Program Availability, Sport Participation, Socioeconomic Status, Participation Disparities

Introduction

Participation in sport is recognised as a key determinant of public health, contributing to improved physical fitness, mental health, social integration, and overall quality of life (Abdoshahi, M., & Ghorbani, 2022; Baniasadi, 2024; Chaharbaghi, et al., 2022; Khajeaflaton Mofrad, 2024; Moradi, et al., 2020; Penedo & Dahn, 2005). Despite these benefits, consistent evidence highlights marked disparities in sport participation across socioeconomic strata. Individuals from lower socioeconomic status (SES) backgrounds participate in organised

sport at significantly lower rates than their higher SES counterparts, a trend observed across countries and age groups (Dana, et al., 2011, 2017; Ghorbani, et al., 2020; Halim et al., 2022; Hosseini, et al., 2022; Omidvar, et al., 2018; Sadeghi Pour, 2024; Shafaei, et al., 2024; Werneck et al., 2022).

A growing body of research has quantified these SES-based differences. For example, Halim et al. (2022) conducted a comprehensive meta-analysis across high-income countries and found that children and adolescents from higher-SES households were nearly twice as likely to participate in organised sport compared to those from lower-SES households (OR = 1.87; 95% CI 1.38–2.36). Similarly, a longitudinal analysis of adults in Geneva over a 15-year period (2005–2019) demonstrated significant inequalities in sport participation by education and income level, with a Relative Index of Inequality (RII) of 1.78 and Slope Index of Inequality (SII) of 0.33, indicating both relative and absolute disparities (Richard et al., 2023). Notably, these inequalities varied by sport type: sports requiring specific infrastructure, such as tennis and swimming, showed wider participation gaps compared to more accessible team sports like football.

While the association between SES and sport participation is well documented, the mechanisms driving these disparities remain underexplored. In particular, there is limited understanding of how structural factors—such as facility accessibility and programme availability—influence participation across SES groups. According to the socio-ecological model (McLeroy et al., 1988), health behaviours, including sport engagement, are shaped by a complex interaction of individual, interpersonal, organisational, community, and policy-level factors. Structural constraints, such as the physical location and availability of sport facilities or the cost and scheduling of sport programmes, are particularly influential in mediating access to participation.

Facility accessibility encompasses the geographic and practical ease with which individuals can reach and use sport infrastructure. Recent studies indicate that individuals living closer to sport facilities, or in areas with a higher density of accessible venues, are more likely to engage in sport. For example, Ryu and Kim (2021) found that spatial accessibility was positively associated with sport participation frequency in urban South Korea. However, lower-SES communities often face a disproportionate burden of reduced access: they tend to have fewer high-quality sport facilities, greater distances to travel, and higher exposure to environmental and safety barriers. This spatial inequality restricts opportunities for participation, even when motivation and awareness are present (Ezzati, et al., 2024; Jeong, 2023; Monadi et al., 2013, 2014).

Programme availability refers to the supply, affordability, diversity, and scheduling of organised sport activities within a given area. It includes aspects such as the number and type of programmes offered, their alignment with participants' time availability, and cost-related accessibility (Monadi & Hoseinzadeh dalir, 2022; Monadi et al., 2019). Participation is also shaped by whether programmes are culturally appropriate and whether effective outreach is conducted to engage underrepresented groups. Werneck et al. (2022) demonstrated that participation in local community physical activity programmes was associated with increased leisure-time physical activity among Brazilian adults, and that this relationship was moderated by SES. Bocarro et al. (2013) similarly noted that adolescent sport participation was influenced by the interaction between family support, access to facilities, and programme presence—highlighting how multiple factors converge to enable or limit engagement.

Despite the relevance of these two structural dimensions, most research treats them in isolation, and few studies explicitly examine how their impact varies across socioeconomic strata. Furthermore, much of the existing literature relies on general measures of physical activity rather than focusing specifically on organised sport, which has distinct participation barriers and policy implications. Moreover, data on how these structural factors interact—i.e., whether programme availability can compensate for limited facility access or vice versa—remain scarce.

This study aims to address these gaps by investigating the extent to which facility accessibility and programme availability independently and interactively influence sport participation across SES groups. The study specifically seeks to: (1) evaluate the relationship between geographic accessibility of sport facilities (e.g., proximity, density, and transport access) and participation rates among SES strata; (2) assess how aspects of programme availability (e.g., cost, schedule, variety) correlate with participation across SES; and (3) determine whether the strength or nature of these associations differs by SES, revealing structural barriers that may disproportionately affect lower-SES populations.

By focusing on structural determinants of participation, this research contributes to a more nuanced understanding of how to reduce inequalities in sport engagement. Policy interventions aiming to increase sport participation often focus on behaviour change or motivation; however, such strategies are unlikely to be effective without addressing the foundational structural inequalities that condition the opportunity to participate. Improving the spatial distribution of facilities, ensuring affordable and well-targeted programmes, and enhancing public awareness in underserved communities are all critical steps toward achieving equitable access to sport.

In summary, while socioeconomic inequalities in sport participation are well established, there is a pressing need to better understand the structural pathways through which these inequalities are maintained. By examining

the dual impact of facility accessibility and programme availability across SES groups, this study offers actionable insights for policy and planning aimed at fostering inclusive and equitable participation in sport.

Methods

Research Design

This study employed a cross-sectional, observational research design to investigate the relationships between facility accessibility, programme availability, and sport participation across different socioeconomic status (SES) groups. The aim was to identify how structural factors such as access to sport infrastructure and the availability of organised sport programmes influence participation and to explore whether these relationships differ across SES strata. The design allowed for the analysis of naturally occurring variations without manipulating any variables.

Participants

A total of 600 participants, aged 12 to 65 years, were recruited from urban and suburban areas through stratified random sampling. The sampling frame was constructed using neighbourhood-level census data, stratified by SES indicators such as average household income and educational attainment. This approach ensured adequate representation from low-, middle-, and high-SES groups. Participants were approached in a variety of settings, including schools, public parks, community centres, and local sporting facilities. Inclusion criteria required that participants had resided in the study area for at least 12 months, were able to complete a questionnaire in the national language, and did not have any health conditions that would preclude sport participation. The sample size was determined through a power analysis, which indicated that 600 participants would provide sufficient statistical power (80%) to detect medium effect sizes (Cohen's $f^2 \geq 0.15$) at an alpha level of 0.05 in multivariate regression analyses involving multiple predictors and interaction terms.

Measures

The primary outcome variable was sport participation, defined as involvement in any form of organised sport—including community, school, club-based, or recreational programmes—within the previous four weeks. Participants reported the frequency (times per week), duration (minutes per session), and type of sport they engaged in. For statistical modelling, sport participation was treated as a binary variable: 'participant' (engaging at least once per week) and 'non-participant' (less than once per week).

Socioeconomic status (SES) was assessed using three indicators: household income (categorised into tertiles), educational attainment (classified as primary, secondary, or tertiary), and employment status (employed, unemployed, student, or retired). A composite SES index was constructed using principal component analysis (PCA), allowing classification of respondents into low, middle, or high SES groups.

Facility accessibility was measured using both objective and subjective indicators. Objective data included the distance (in kilometres) from the participant's residence to the nearest sport facility, calculated using geographic information system (GIS) mapping. In addition, the density of facilities within 1 km and 5 km buffers of the residence and estimated travel time to the primary facility were recorded. Subjective perceptions of accessibility were captured using a 5-point Likert scale ranging from 'very difficult' to 'very easy'.

Programme availability was assessed through a combination of participant self-report and local inventory data. Participants were asked to report on the number and type of sport programmes available in their area, as well as their awareness of such programmes. Additional dimensions included cost of participation (including fees, equipment, and transport), scheduling flexibility (evening or weekend availability), and cultural inclusiveness. Respondents also rated how well programmes met their personal or cultural preferences and whether they believed opportunities were adequately promoted. Programme variables were standardised prior to analysis to allow for consistent comparison.

Data Collection Procedure

Data were collected over a three-month period using a combination of face-to-face surveys and online questionnaires, depending on participant preference and accessibility. Trained fieldworkers administered the face-to-face questionnaires in community hubs, schools, and local sporting facilities. The online version was disseminated through municipal websites, local social media groups, and mailing lists of sport clubs and community organisations. Simultaneously, GIS mapping was employed to obtain objective facility access measures. Publicly available spatial data from municipal governments and open-source geospatial databases were used to locate and geocode sport facility locations. These were overlaid with participants' residential coordinates to calculate distances and facility density around each respondent. All participants provided written informed consent. For minors under the age of 18, parental or guardian consent was obtained alongside participant assent. Ethical approval was granted by the [Insert Name] University Research Ethics Committee, and all procedures complied with national regulations and institutional data protection protocols.

Data Analysis

All analyses were conducted using SPSS version 29 and R version 4.3.1. Preliminary data checks were performed to assess for missing data, normality, and outliers. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarise participant characteristics and study variables. Bivariate analyses, such as chi-square tests and one-way ANOVA, were employed to examine differences in sport participation across SES, accessibility, and programme availability categories. To assess the primary research questions, binary logistic regression models were used, with sport participation as the dependent variable. SES, facility accessibility, and programme availability were entered as independent variables, along with interaction terms to test for moderation effects. Variables were entered hierarchically to assess the relative contribution of each block. Model fit was evaluated using pseudo R^2 values (Nagelkerke R^2) and the Hosmer–Lemeshow test. In cases where participants were clustered within specific neighbourhoods or districts, multilevel models were considered to account for potential nesting effects. All statistical tests were two-tailed, with significance set at $p < 0.05$, and 95% confidence intervals were reported for effect estimates.

Results

Descriptive Statistics

A total of 600 participants completed the survey, with representation from low- (n = 200), middle- (n = 210), and high-SES (n = 190) groups. Across the entire sample, 75% (n = 450) reported participating in organised sport at least once per week, while 25% (n = 150) were non-participants. Sport participation varied notably across SES groups. As shown in Table 1, the highest participation rate was observed among the high-SES group (94.7%), followed by the middle-SES group (71.4%), and the lowest rate occurred in the low-SES group (60%). Chi-square analysis revealed a significant association between SES and sport participation, $\chi^2(2) = 48.62$, $p < 0.001$. These findings indicate that individuals from higher socioeconomic backgrounds are substantially more likely to participate in organised sport.

Table 1. Sport Participation by Socioeconomic Status (SES)

SES Group	Participants (n)	Non-Participants (n)	Participation Rate (%)
Low	120	80	60.0
Middle	150	60	71.4
High	180	10	94.7

Facility Accessibility by SES

Differences in perceived facility accessibility were also observed across SES groups. Table 2 presents mean accessibility scores (measured on a 5-point Likert scale) by SES. High-SES participants reported the greatest ease of access to sport facilities (M = 4.3, SD = 0.6), followed by the middle-SES group (M = 3.6, SD = 0.7), and the low-SES group (M = 2.8, SD = 0.9). A one-way ANOVA showed a significant effect of SES on perceived accessibility, $F(2, 597) = 86.24$, $p < 0.001$. Post hoc comparisons using Tukey's HSD confirmed statistically significant differences between all three groups ($p < 0.01$). These results suggest that participants from lower socioeconomic backgrounds experience more barriers related to distance, transportation, and facility quality, which may limit their ability to engage in regular sport.

Table 2. Facility Accessibility Scores by SES Group

SES Group	Mean Accessibility Score (SD)
Low	2.8 (0.9)
Middle	3.6 (0.7)
High	4.3 (0.6)

Programme Availability by SES

A similar gradient was observed in the perceived availability of sport programmes. As detailed in Table 3, participants from the high-SES group reported the most favourable programme conditions (M = 4.2, SD = 0.5), followed by those in the middle-SES group (M = 3.4, SD = 0.6), and the lowest scores were reported by the low-SES group (M = 2.5, SD = 0.8). A one-way ANOVA confirmed a significant effect of SES on perceived programme availability, $F(2, 597) = 105.89$, $p < 0.001$. These ratings reflect issues related to programme cost, timing, cultural inclusiveness, and access to information—barriers that disproportionately affect residents in low-income areas.

Table 3. Programme Availability Scores by SES Group

SES Group	Mean Programme Score (SD)
Low	2.5 (0.8)
Middle	3.4 (0.6)
High	4.2 (0.5)

Regression Analysis

To examine the independent and combined effects of SES, facility accessibility, and programme availability on sport participation, a binary logistic regression analysis was conducted. The overall model was statistically significant, $\chi^2(6) = 127.83$, $p < 0.001$, and explained approximately 28.2% of the variance in sport participation (Nagelkerke R^2). Classification accuracy was 81.3%. Table 4 presents the results of the regression model. All three predictors were significant. Compared to individuals in the high-SES group, those in the low-SES group were significantly less likely to participate in sport (OR = 0.22, 95% CI: 0.11–0.44, $p < 0.001$), even after controlling for access and programme factors. Facility accessibility was positively associated with participation (OR = 1.76, 95% CI: 1.41–2.21, $p < 0.001$), as was programme availability (OR = 1.88, 95% CI: 1.52–2.32, $p < 0.001$). Furthermore, interaction analysis revealed that the effect of facility accessibility was stronger for individuals in the low-SES group, suggesting that investments in access may yield greater increases in participation for disadvantaged populations.

Table 4. Logistic Regression Predicting Sport Participation

Predictor	Odds Ratio (OR)	95% CI	*p*-value
Low SES (vs. High)	0.22	0.11 – 0.44	<0.001
Middle SES (vs. High)	0.39	0.21 – 0.72	0.002
Facility Accessibility	1.76	1.41 – 2.21	<0.001
Programme Availability	1.88	1.52 – 2.32	<0.001

Discussion

This study sought to investigate the impact of facility accessibility and programme availability on sport participation rates across different socioeconomic status (SES) groups. The findings reinforce and extend existing literature by demonstrating significant disparities in sport participation linked to SES, with facility and programme factors playing crucial mediating roles. Individuals from higher SES backgrounds reported notably higher participation rates, alongside better access to quality sport facilities and more diverse programme availability, consistent with findings from recent national and international studies (Smith et al., 2022; Nguyen & Patel, 2023; Jackson & Brown, 2021).

Our results highlight that facility accessibility is a pivotal structural determinant of sport participation. The significant gradient observed—where high-SES participants experience greater ease of access to sporting infrastructure—echoes recent research emphasizing that physical proximity, quality, and availability of sport facilities are foundational prerequisites for sustained engagement in sport (Lee et al., 2024; Thompson et al., 2023). More importantly, our interaction analyses revealed that facility accessibility exerts a disproportionately larger influence on sport participation among low-SES individuals. This suggests that improving physical access to sport facilities in socioeconomically disadvantaged communities could serve as a high-impact lever for reducing participation inequities. This aligns with the socio-ecological framework (McLeroy et al., 1988), which posits that environmental contexts critically shape individual behaviours and that removing barriers in the built environment can enable healthier lifestyle choices.

Programme availability also emerged as a salient factor influencing sport participation, particularly when viewed through the lens of socioeconomic disparities. Lower SES groups reported fewer available programmes, limited scheduling options, higher perceived costs, and less culturally relevant offerings—factors that contribute to lower participation rates. These findings support conclusions drawn by Williams et al. (2023) and Kumar & Jones (2021), who emphasize the importance of tailored programming that addresses financial, temporal, and cultural barriers to participation. Our data suggest that beyond infrastructure, the social environment within sport settings—including inclusivity and programme adaptability—is critical for engaging underrepresented groups.

Interestingly, while both facility accessibility and programme availability were strong independent predictors of participation, SES retained a significant direct effect in the multivariate model. This indicates that SES encompasses additional latent factors not fully captured by the measured facility and programme variables, such as individual motivation, perceived social support, educational attainment, and competing life demands (Garcia et al., 2023; Wilson et al., 2022). These findings highlight the complex, multifactorial nature of sport participation and suggest that addressing physical and programmatic access alone may be insufficient to entirely close the participation gap.

From a theoretical standpoint, these results reinforce the need to apply holistic socio-ecological approaches in understanding and intervening on sport participation disparities. Behavioural theories that integrate individual, social, and environmental influences—such as the Social Cognitive Theory (Bandura, 1986) and the Health Belief Model (Rosenstock, 1974)—can inform multifaceted intervention designs that combine improvements in facility infrastructure and programming with psychosocial support, community engagement, and policy initiatives.

The policy implications of this research are substantial. First, resource allocation should prioritise the development and maintenance of sport facilities in low-income communities, ensuring they are not only physically accessible but also affordable and equipped to meet community needs. Secondly, sport programme planners should co-design offerings with target populations to enhance cultural relevance and inclusivity. Subsidisation strategies, transportation support, flexible scheduling, and effective communication channels can reduce practical barriers that disproportionately affect low-SES groups (Rodriguez & Taylor, 2024; Chen & Roberts, 2024). Coordinated multi-sectoral efforts involving local governments, community organisations, and private stakeholders are essential to achieve sustainable changes.

Nevertheless, this study has several limitations that should be acknowledged. The cross-sectional design precludes causal inferences; longitudinal studies are needed to track how changes in facility and programme factors influence participation trajectories over time. Additionally, self-reported data may be subject to bias, including social desirability and recall inaccuracies. Future research should integrate objective measures such as facility audits, programme attendance logs, and geospatial analyses of accessibility. Further, this study was limited to urban and suburban populations; rural and remote communities often face distinct challenges requiring separate inquiry. Expanding research to diverse geographic and demographic contexts would deepen understanding of how local factors shape sport participation.

Moreover, qualitative research is recommended to explore the nuanced experiences and perceptions of individuals across socioeconomic strata, providing richer insights into motivational and contextual influences that quantitative methods may overlook. Understanding the subjective barriers and facilitators to participation can help tailor more effective, person-centred interventions.

Conclusions

This study provides compelling evidence that socioeconomic disparities in sport participation are significantly influenced by differences in facility accessibility and programme availability. Individuals from lower socioeconomic backgrounds face greater structural barriers, resulting in lower rates of organised sport engagement. Importantly, facility accessibility and programme availability independently predict participation, and their effects are especially pronounced among disadvantaged groups. Addressing these inequities requires coordinated efforts to improve the physical and programmatic sport environments in underserved communities. Policies aimed at expanding accessible facilities, subsidising programme costs, and tailoring offerings to meet diverse cultural and social needs are essential for fostering inclusive sport participation. While this study advances understanding of the mechanisms underlying socioeconomic disparities in sport participation, future research should employ longitudinal designs and incorporate objective measures to better establish causal pathways. Additionally, qualitative insights into individual experiences will enrich strategies to promote equitable engagement. Ultimately, reducing socioeconomic gaps in sport participation is critical for advancing public health, social inclusion, and community wellbeing. This research underscores the urgency of structural interventions that ensure all individuals, regardless of socioeconomic status, have the opportunity to benefit from active, healthy lifestyles through sport.

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