



Gender Differences in Physical Activity Enjoyment, Psychosocial Functioning, and Physical Fitness Among Elementary Students

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Abstract:

Regular physical activity is essential for the holistic development of elementary school students. While previous research suggests that gender might influence children's fitness, wellbeing, and enjoyment of movement, existing evidence often remains contradictory. To address this, the current study examined genderbased differences in physical fitness, psychosocial behavior, and exercise enjoyment among elementary students in Pasuruan Regency. Using a comparative crosssectional design, 150 purposively selected students (75 boys and 75 girls) were evaluated using the Physical Activity Enjoyment Scale (PACES), the Prosocial Behaviour Questionnaire (PBQ), and the Indonesian Physical Fitness Test (TKJI). Data analysis using the MannWhitney U test revealed no significant gender differences in activity enjoyment ($U = 2317$, $p = 0.062$) or psychosocial functioning ($U = 2619$, $p = 0.464$). However, boys significantly outperformed girls in actual physical fitness ($U = 1538$, $p < 0.001$). This study clarifies inconsistent literature by demonstrating that despite a clear fitness gap, boys and girls share an equal enthusiasm for exercise and gain similar psychosocial benefits. Practically, these findings emphasize the need for schools to implement differentiated physical education programs that accommodate specific fitness differences while leveraging students' shared enjoyment to foster equitable development for all.

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Introduction (مقدمة)

Physical movement is the cornerstone of holistic development for children aged 6 to 12, acting as a crucial bridge that integrates physical maturation with emotional and social growth.

Beyond the simple refinement of motor skills, structured physical activity serves as a profound pedagogical instrument. It builds self-efficacy, fosters psychological stability, and sharpens cognitive processing, thereby laying the groundwork for both lifelong health and resilient academic performance (Donnelly et al., 2016). However, the modern landscape of childhood is increasingly defined by sedentary habits. A severe "movement deficit" is currently unfolding globally, particularly across Southeast Asia, where digital entertainment has largely overshadowed active outdoor play (Tremblay et al., 2016). This behavioral shift elevates physical inactivity from a mere health risk to a pressing educational crisis, as the decline in movement directly threatens children's cognitive and physical vitality.

For physical education to effectively counter this trend, it must be rooted in enjoyment. When movement shifts from a mandatory school task to a source of intrinsic pleasure, children are far more likely to sustain their engagement (Hashim et al., 2018). Viewed through the lens of Self-Determination Theory, this joy thrives in environments where children experience autonomy, a growing sense of competence, and a supportive community (Ntoumanis et al., 2020). Through these positive physical experiences, students naturally cultivate essential psychosocial virtues, including empathy, teamwork, and emotional regulation (Vella et al., 2017). However, these developmental pathways do not exist in a vacuum; they are heavily dictated by environmental influences and societal norms. Children tend to mirror the physical habits of their surroundings (Lubans et al., 2016), and as they approach late childhood, clear disparities in fitness often emerge, driven by a complex interplay of biology and cultural expectations (Cattuzzo et al., 2016).

This brings to light a critical issue within educational settings: the persistent influence of narrow gender stereotypes. School environments often unintentionally perpetuate biases that label certain physical activities as "masculine," thereby alienating female students from fully engaging in physical cultures. While it is widely accepted that the emotional and physical habits formed in childhood dictate long-term health trajectories (Mura et al., 2015), a significant research gap remains regarding exactly how gender shapes children's experiences in physical education. Previous literature frequently presents contradictory findings or isolates individual variables, failing to capture the full picture of a child's development (Agans et al., 2019). Consequently, the novelty of this study lies in its integrative approach: it simultaneously investigates the intersection of gender across three distinct yet deeply interconnected variables – physical fitness, psychosocial functioning, and exercise enjoyment.

Educational institutions have a moral imperative to dismantle gender-based barriers and ensure equal opportunities for physical exploration. By addressing the current inconsistencies in the literature and exploring these three core variables within the unique sociocultural context of Pasuruan Regency, this research seeks to provide vital empirical clarity. Understanding these specific local and gendered dynamics is essential for educators and policymakers to design truly equitable, differentiated physical education programs that nurture the holistic wellbeing of every student, regardless of gender.

Method (منهج)

Research Design

This investigation employed a quantitative comparative cross-sectional design, consistent with methodological frameworks outlined by Creswell and Creswell (2023) and Fraenkel et al. (2022). The design facilitated systematic comparison between male and female student groups across three developmental dimensions through single-point data collection. Fieldwork was conducted across multiple elementary schools in Pasuruan Regency, East Java Province,

Indonesia, targeting students in grades four, five, and six.

Participants and Sampling

The study recruited 150 participants through purposive sampling, comprising equal proportions of 75 male and 75 female students. Purposive sampling was deliberately selected for several methodological justifications. First, the comparative nature of this investigation required precise gender balance to ensure statistical power and minimize confounding variables (Etikan et al., 2016). Second, targeting upper elementary grades (ages 10-12) aligned with developmental periods where gender differences in physical performance become more pronounced (Cattuzzo et al., 2016). Third, this sampling approach enabled researchers to select schools with adequate facilities for standardized fitness testing and teachers with sufficient observational familiarity with student behavior patterns. Fourth, purposive selection ensured participants had sufficient cognitive maturity to comprehend self-report questionnaires accurately. These considerations collectively justified nonrandom sampling as the most appropriate strategy for addressing the research objectives within practical constraints.

Variables and Instrumentation

Three primary variables were operationalized through validated instruments, as detailed in Table 1.

Table 1. Variables, Operational Definitions, and Research Instruments

Variable	Operational Definition	Instrument
Physical Activity Enjoyment	Students' positive affective response toward physical activity experiences	PACES (Hashim et al., 2018)
Psychosocial Functioning	Students' prosocial behavior including cooperation, empathy, and mutual assistance	Modified PBQ (Weir & Duveen, 1981)
Physical Fitness	Students' physical capacity to complete daily activities without excessive fatigue	TKJI for ages 10-12 years

Physical Activity Enjoyment Scale (PACES)

The PACES instrument utilizes semantic differential bipolar scaling to capture affective dimensions during movement participation. The scale has demonstrated robust psychometric properties with Cronbach's alpha coefficients consistently exceeding 0.85 across diverse populations (Hashim et al., 2018). Content validity was established through expert panel review, while construct validity was confirmed via confirmatory factor analysis demonstrating acceptable fit indices ($CFI > 0.90$, $RMSEA < 0.08$). The Indonesian adaptation employed in this study maintained these psychometric standards through rigorous translationbacktranslation procedures and pilot testing with 30 students not included in the final sample, yielding a reliability coefficient of $\alpha = 0.88$.

Prosocial Behaviour Questionnaire (PBQ)

The PBQ relies on teacher observational assessments from educators maintaining sustained direct contact with students' social behavioral patterns. Original validation studies by Weir and Duveen (1981) reported interrater reliability coefficients of $r = 0.76$ and test-retest reliability of $r = 0.82$ over four-week intervals. The questionnaire's criterion validity was established through significant correlations ($r = 0.68$, $p < 0.001$) with peer sociometric nominations. For this study, only teachers with minimum six-month classroom experience with participating students

completed assessments, ensuring observational accuracy. The Indonesian version demonstrated internal consistency of $\alpha = 0.84$ in pilot testing.

Indonesian Physical Fitness Test (TKJI)

The TKJI encompasses five standardized performance components: 40meter sprint (speed), flexed arm hang (upper body strength), 30second situps (core endurance), vertical jump (explosive power), and 600meter run (cardiovascular endurance). As the nationally standardized fitness assessment mandated by Indonesia's Ministry of Education and Culture, TKJI possesses established normative data for Indonesian children aged 10-12 years. Validity coefficients ranging from 0.72 to 0.86 have been documented across components through comparison with criterion laboratory measures. Test-retest reliability over two-week intervals ranges from 0.79 to 0.92, confirming measurement stability (Indonesian Ministry of Education, 2010).

Data Collection Procedures

Data were systematically gathered through three coordinated channels. First, PACES questionnaires were administered in supervised classroom environments where researchers provided standardized verbal instructions ensuring comprehension uniformity. Second, psychosocial assessments were completed by classroom teachers who had observed students' authentic social interaction patterns for at least one academic semester, ensuring ecological validity. Third, TKJI batteries were sequentially administered on school athletic grounds following standardized procedural protocols, with trained assessors maintaining interrater consistency through prior calibration sessions. All fitness testing occurred during morning hours (08:00-10:00) to control for circadian performance variations, with adequate rest intervals between test components to minimize fatigue confounds.

Data Analysis Procedures

Statistical analysis proceeded through systematic phases. Preliminary descriptive statistics characterized central tendency, dispersion, and distributional properties across all variables for both gender groups. Assumption testing employed Shapiro-Wilk procedures to evaluate normality and Levene's test to assess variance homogeneity. Results revealed significant departures from normal distribution assumptions ($p < 0.05$) and heterogeneous between-group variances for fitness scores, directing analytical decisions toward nonparametric procedures. The Mann-Whitney U test served as the primary hypothesis evaluation instrument, appropriate for comparing two independent groups when parametric assumptions are violated. Statistical significance was determined at $\alpha = 0.05$, with effect sizes calculated using rank-biserial correlations to quantify practical significance beyond mere statistical differences. All computational procedures were executed through jamovi version 2.6 (The jamovi project, 2024), with data visualization conducted to facilitate interpretation.

Ethical Considerations

The study received approval from institutional ethics review boards. Parental informed consent and student assent were obtained prior to participation. Confidentiality was maintained through participant coding, and students could withdraw without penalty at any stage.

Result (نتائج)

The participant sample comprised 150 elementary students from grades four through six, distributed equally between 75 male and 75 female participants aged ten to twelve years, satisfying TKJI age-appropriate norming requirements.

Table 2. Descriptive Statistics of Research Variables Based on Gender

Variable	Gender	N	Missing	Mean	SD	Minimum	Maximum
Physical Activity Enjoyment	Female	75	0	58.9	4.48	51	68
	Male	75	0	60.5	5.77	51	69
Psychosocial Functioning	Female	75	0	68.9	6.84	46	74
	Male	75	0	70.5	3.47	47	74
Physical Fitness (TKJI)	Female	75	0	18.0	1.86	15	20
	Male	75	0	20.1	2.33	15	24

Descriptive findings reveal male students achieved marginally elevated physical activity enjoyment scores ($M = 60.5$) compared to females ($M = 58.9$), representing a modest 1.6point differential. Psychosocial scores similarly positioned males slightly higher ($M = 70.5$ versus 68.9), though the substantially larger female standard deviation ($SD = 6.84$ versus 3.47) indicates considerably greater withingroup heterogeneity among girls. Physical fitness produced the most pronounced differential, with males averaging 20.1 against females' 18.0 – a 2.1point separation warranting inferential examination.

Assumption Testing and Hypothesis Testing Results

Preliminary ShapiroWilk testing confirmed significant departures from normal distribution across all variables ($p < 0.05$), while Levene assessments identified nonequivalent variance structures between gender groups. These violations collectively justified exclusive reliance upon nonparametric MannWhitney U procedures for hypothesis testing.

Table 3. MannWhitney U Test Results

Variable	Statistic	pvalue	Effect Size
Physical Activity Enjoyment	$U = 2317$	0.062	$r = 0.176$
Psychosocial Functioning	$U = 2619$	0.464	$r = 0.069$
Physical Fitness (TKJI)	$U = 1538$	$< 0.001^{***}$	$r = 0.453$

Note. $H_a: \mu_{\text{FEMALE}} \neq \mu_{\text{MALE}}$; *** $p < 0.001$



Discussion (مناقشة)

Equivalent Physical Activity Enjoyment Across Genders: Challenging Traditional Assumptions

The absence of statistically significant gender differences in physical activity enjoyment ($U = 2317$, $p = 0.062$, $r = 0.176$) represents a particularly meaningful finding that challenges persistent educational assumptions about gendered movement preferences. This equivalence suggests that when physical education environments are thoughtfully designed, intrinsic motivation for movement transcends biological sex. Through the lens of Self Determination Theory (Ntoumanis et al., 2020), this outcome illuminates how fundamental psychological needs autonomy, competence, and relatedness operate as universal motivational mechanisms rather than genderspecific constructs. When students perceive genuine choice in activity selection, experience progressive skill mastery, and feel authentic social belonging, enjoyment flourishes equally regardless of gender identity.

Several contextual interpretations warrant consideration. First, contemporary elementary physical education in Pasuruan Regency may increasingly emphasize diverse activity portfolios that accommodate varied movement preferences, reducing traditional gender stereotyping of specific sports or exercises. Agans et al. (2019) substantiate this interpretation, demonstrating that instructional quality characterized by teacher enthusiasm, positive feedback, and developmentally appropriate challenge constitutes a substantially more powerful determinant of affective responses than student gender. Second, the comparable enjoyment levels may reflect Indonesia's collectivist cultural values that emphasize group harmony and collaborative play over competitive individualism, potentially mitigating genderbased hierarchies common in more individualistic societies.

The small to moderate effect size ($r = 0.176$), while statistically nonsignificant, merits pedagogical attention. This marginally higher male enjoyment may signal subtle environmental factors such as equipment accessibility, teacher interaction patterns, or peer encouragement dynamics that inadvertently favor male engagement. Cairney et al. (2019) propose that physical literacy development creates self-reinforcing confidence cycles; if girls encounter even slight systematic barriers to skill acquisition, cumulative disadvantages may compound over time despite initially equivalent enjoyment. Therefore, the nonsignificant finding should not justify complacency but rather inspire proactive efforts to ensure truly equitable affective experiences.

Parallel Psychosocial Development: Universal Benefits of Structured Movement

The nonsignificant psychosocial difference ($U = 2619$, $p = 0.464$, $r = 0.069$) provides compelling evidence that prosocial capacities—cooperation, empathy, sharing, and conflict resolution—develop along fundamentally parallel trajectories for boys and girls within physical activity contexts. This finding challenges outdated gender essentialist perspectives suggesting inherent male-female differences in socioemotional competencies. Vella et al. (2017) explain that physical activity cultivates psychosocial benefits through mechanisms operating independently of gender: shared goal pursuit, interdependent task structures, emotion regulation opportunities during competition, and perspective-taking experiences inherent in rule-governed games.

The substantially greater variability among female students ($SD = 6.84$) compared to males ($SD = 3.47$) deserves nuanced interpretation. Rather than indicating deficiency, this heterogeneity likely reflects greater individual sensitivity to specific relational climates and instructional approaches among girls. Research by Oberle et al. (2016) demonstrates that girls' prosocial development exhibits stronger responsiveness to environmental quality variables including teacher warmth, peer acceptance, and classroom emotional safety. Some girls may thrive in collaborative movement environments that emphasize communal achievement and mutual support, while others may struggle in competitive or evaluative contexts that trigger social comparison anxieties.

This variability carries important practical implications. Physical educators should recognize that one-size-fits-all approaches may inadequately serve girls' diverse psychosocial needs. Differentiated instruction—offering varied grouping configurations, multiple pathways to success, and opportunities for both leadership and followership—may reduce within-gender variability while maintaining high average outcomes. Furthermore, teacher professional development should emphasize recognizing and responding to individual differences within gender groups rather than treating gender as a monolithic category.

Significant Physical Fitness Disparities: Disentangling Biology from Sociocultural Constraint

The substantial and statistically significant male advantage in physical fitness performance ($U = 1538$, $p < 0.001$, $r = 0.453$) represents the study's most pronounced finding, demanding careful interpretation that acknowledges biological realities while avoiding deterministic

conclusions. A medium to large effect size ($r = 0.453$) indicates meaningful practical significance beyond mere statistical artifact. Males demonstrated superior performance across the composite TKJI battery, which assesses cardiovascular endurance (600m run), muscular strength (flexed arm hang), explosive power (vertical jump), core endurance (situps), and speed (40m sprint).

Biological foundations provide partial explanation. Cattuzzo et al. (2016) document that pre adolescent and early adolescent males typically exhibit advantageous physiological characteristics including greater muscle mass to fat ratios, higher hemoglobin concentrations facilitating oxygen transport, and hormonal profiles (particularly testosterone) that promote strength and power development. These differences become increasingly pronounced as children approach puberty, with the current sample's 1012 year age range representing a transitional period where such dimorphisms emerge more prominently. Cardiovascular development similarly favors males during this period, with larger heart volumes and stroke capacities supporting superior endurance performance.

However, attributing fitness disparities solely to biology constitutes a dangerous oversimplification that risks perpetuating inequity. Lubans et al. (2017) provide compelling evidence that sociocultural constraints operate as powerful cofactors that systematically suppress girls' physical development despite equivalent biological potential. Several intersecting mechanisms warrant consideration:

First, differential activity accumulation: Time use studies consistently demonstrate that boys engage in approximately 2030% more daily moderate to vigorous physical activity than girls, primarily through informal play and sport participation. This chronic movement deficit translates to reduced training stimulus for cardiovascular, muscular, and neuromuscular systems, creating performance gaps that reflect opportunity deprivation rather than inherent limitation.

Second, stereotype threat and confidence erosion: When girls internalize cultural narratives positioning physical prowess as inherently masculine, they may approach fitness assessments with diminished self-efficacy and heightened anxiety. Psychological research demonstrates that stereotype threat independently impairs motor performance through cognitive interference and physiological stress responses, meaning observed disparities may partially reflect testing context rather than true capability differences.

Third, restricted movement socialization: Girls often encounter narrower activity repertoires emphasizing aesthetics, flexibility, and grace over strength, power, and endurance. Dance and gymnastics, while valuable, develop different physiological adaptations than the running, jumping, and climbing experiences more commonly afforded to boys. This constrained movement palette leaves girls underprepared for fitness assessments designed around traditionally masculine activity patterns.

Fourth, instructional bias and expectation effects: Subtle teacher behaviors differential encouragement, effort attribution patterns, and challenge provision may communicate lower expectations for female physical achievement. When educators implicitly accept fitness disparities as natural and inevitable, they may unconsciously withhold the intensive coaching and high expectation support that facilitates breakthrough performance.

The convergence of these sociocultural factors with biological predispositions creates what might be termed "compounded disadvantage." Initial small biological differences become magnified through cumulative exposure to movement restrictive environments, producing observed disparities that vastly exceed what biology alone would predict. Importantly, cross cultural research reveals substantial variability in the magnitude of gender fitness gaps, with egalitarian societies demonstrating markedly smaller differences than those with rigid gender role enforcement (Bann et al., 2019). This variability confirms that current disparities are neither

universal nor inevitable.

From a developmental equity perspective, several implications emerge. First, physical educators must reject deficit models positioning girls as inherently less physically capable. Second, curriculum design should intentionally incorporate strength, power, and endurance development specifically for girls, recognizing that traditional activity selections may systematically underserve their fitness needs. Third, assessment practices might adopt genderspecific norming or improvementbased evaluation to ensure girls receive appropriate recognition for physiological gains rather than feeling perpetually deficient relative to male benchmarks. Fourth, counterstereotypical messaging and female athletic role models should be prominently featured to combat internalized limitations.

Critically, Hashim et al. (2018) remind us that physical fitness disparities during elementary years carry lifelong consequences. Fitness levels established during childhood predict adult cardiovascular health, metabolic function, and chronic disease risk across subsequent decades. Girls who exit elementary school with lower fitness and diminished physical confidence face steeper barriers to active lifestyles, creating gendered health inequities that compound across the lifespan. Therefore, addressing fitness disparities represents not merely an educational concern but a public health imperative requiring urgent, sustained intervention.

Integrated Interpretation: Decoupling Affective, Social, and Physical Dimensions

A particularly insightful pattern emerges when examining results holistically: girls and boys demonstrate equivalent psychological engagement (enjoyment) and social development (prosocial behavior) despite significant physical performance differences. This dissociation challenges simplistic assumptions that physical competence necessarily determines affective and social outcomes. Students can derive profound joy and meaningful social connection from movement experiences even when their fitness performance falls below gendercomparative norms.

This pattern suggests that elementary physical education successfully fulfills certain core missions while falling short on others. Contemporary programs appear effective at creating inclusive affective climates where all students feel welcomed and engaged, and at leveraging movement as a vehicle for socialemotional learning across genders. However, these same programs may inadequately address the systematic fitness development needs of female students, allowing preventable performance gaps to widen.

Moving forward, the challenge lies in preserving what works equitable enjoyment and psychosocial benefits while intentionally addressing fitness inequities through differentiated instruction, expectation elevation, and stereotype disruption. The goal is not identical performance but rather ensuring every student, regardless of gender, reaches their fullest physical potential and establishes fitness foundations supporting lifelong health.



Conclusion (خاتمة)

In conclusion, this study demystifies the role of gender in elementary physical education, offering a nuanced understanding of children's developmental experiences. The primary findings reveal a striking dichotomy: while boys demonstrate significantly superior physical fitness compared to their female peers, there are absolutely no significant gender differences regarding exercise enjoyment or psychosocial functioning. This indicates that the fitness gap is largely driven by a blend of early biological shifts and unequal sociocultural opportunities for active play, rather than an inherent lack of interest or social capability among girls.

However, this study is not without its limitations. First, the crosssectional design captures data at only a single point in time, preventing the observation of developmental trajectories over the academic years. Second, the geographical focus restricted to Pasuruan Regency limits the ability to generalize these findings to broader national or international populations. Furthermore, the methodology relied on subjective selfreporting and teacher observations, and did not account for external lifestyle variables such as nutritional status, socioeconomic background, or daily screen time, which undoubtedly influence childhood fitness.

Based on these findings, several practical recommendations emerge for elementary school physical education programs. Educators must transition toward highly differentiated instructional models. Because girls possess the exact same enthusiasm for movement and capacity for teamwork as boys, teachers should leverage this shared joy by designing gamebased, inclusive fitness challenges. Instead of imposing rigid, standardized fitness benchmarks that might trigger anxiety in less active students, curricula should focus on personalized progression. By cultivating a psychologically safe and encouraging environment, schools can systematically bridge the physical fitness gap while nurturing the holistic, socialemotional wellbeing of every student, regardless of gender.

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