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Original Investigation

Enhancing long jump performance in physical education: A randomized controlled trial of the good behaviour game with middle school students

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Purpose: This study investigated the effect of the Good Behaviour Game (GBG) on targeted motor performance metrics during long jump instruction.
Methods: In this randomized controlled trial, 40 middle school students (age: 13.10±.40 years) were equally distributed between experimental and control-groups. The experimental group received the GBG intervention integrated into their regular physical education curriculum, while the control group participated in standard physical education sessions. Long jump performance was evaluated through jump distance and number of successful jumps.
Results: The experimental group showed significantly greater improvements in jump distance (males: 29.80%; females: 27.70%) compared to controls (males: 17.30%; females: 16.70%), with a significant Group × Time interaction (P<.001, ηp2 = .46). For successful jumps, the GBG group achieved markedly greater improvements (males: +1.10 jumps; females: +1.40 jumps) versus controls (males: +.60; females: +.50), yielding large effect sizes (Cohen's d > 1.9) for all comparisons. While females in the experimental group demonstrated a particularly pronounced improvement in successful jumps, no significant sex differences were observed in relative improvements for jump distance. The GBG significantly enhanced both quantitative and qualitative dimensions of long jump performance.
Conclusions: These findings extend the established GBG literature beyond behavioural management applications into performance enhancement domains, demonstrating its utility as a powerful pedagogical tool for enhancing targeted motor skills in physical education.

Keywords: Adolescent development; Behavioural objectives; Group contingency; Motor skills; Performance assessment; Physical fitness; Skill acquisition; Sports pedagogy, multidisciplinary approach; performance optimisation, talent development

Introduction

The Good Behaviour Game (GBG) is an evidence-based behavioural intervention originally developed by Barrish (1) to promote positive behaviour and reduce disruptions in classroom environments. This approach employs an interdependent group contingency framework wherein students are divided into teams, behavioural rules are explicitly stated, and rewards are given to teams meeting specified criteria (2). Over five decades of empirical research has consistently demonstrated the GBG's effectiveness across diverse educational contexts, including special education (3), kindergarten (4), and secondary classrooms (5), highlighting its adaptability and broad applicability.

Physical education (PE) significantly contributes to the development of motor skills, physical fitness, and health-related behaviours among school-aged children (6). Despite these recognized benefits, PE instructors frequently encounter behavioural management challenges that can reduce instructional time and diminish students' engagement in physical activities(7). Effective behavioural management strategies are therefore essential to maximize learning opportunities and optimize physical performance outcomes in PE settings.

Recent studies have broadened GBG applications beyond traditional classroom management, demonstrating its utility in addressing behavioural challenges such as enhancing physical activity(8). Within PE environments specifically, (9) documented increased physical activity levels during recess periods following GBG implementation, while other studies observed enhanced engagement in classroom-based physical activities.

Managing behaviour in PE presents unique challenges. Large groups of students, high physical arousal, varying motor skill abilities, limited instructor supervision, and diverse practice locations (e.g., gyms, outdoor fields, sports halls) can contribute to disruptive behaviours (10). These factors make it difficult for teachers to ensure both safety and optimal motor skill practice, highlighting the need for structured interventions that promote behavioural compliance while supporting physical performance.

Previous investigations primarily focused on behavioural compliance and general participation metrics rather than specific physical performance outcomes. While important for managing class behaviour, this emphasis may overlook the GBG's potential to enhance actual motor skill acquisition and performance. Indeed, (11) highlighted that optimal PE environments should simultaneously nurture both behavioural compliance and physical skill development, suggesting these dimensions should be evaluated concurrently when assessing intervention efficacy.

Theoretical foundations for potential GBG effects on performance metrics include several psychological mechanisms. The GBG's team-based structure with interdependent group contingencies activates social reinforcement dynamics that can motivate greater physical effort and technical precision (12). By reducing disruptive behaviours, the GBG may increase engaged learning time, allowing for more practice opportunities and instructor feedback (4). Clearly articulated performance expectations within the GBG framework may enhance task focus and execution quality (13).

Despite these theoretical connections, empirical research specifically examining GBG effects on quantifiable physical performance remains scarce. Some recent investigations have explored GBG applications in specialized PE contexts, such as with students with mild intellectual disabilities (14). However, comprehensive analysis of performance outcomes in skill-based activities among typically developing adolescents remains underexplored. To date, no studies have directly examined GBG impact on specialized physical performance indicators, such as those required in the long jump, an activity demanding speed, coordination, and technique, within structured PE sessions (15).

This study aims to address this gap by exploring the effect of the GBG on targeted physical performance metrics within specific physical activity cycles during PE sessions. Additionally, the study examines potential sex-differentiated responses to determine if the intervention's effectiveness varies between male and female students, addressing an important demographic consideration highlighted by recent research (16). Through this investigation, we hypothesize that GBG implementation will significantly improve both quantitative (jump distance) and qualitative (successful jumps) dimensions of physical performance compared to standard PE instruction, with potentially similar efficacy across sex groups. This study is positioned within contemporary research efforts that seek to understand the complex interplay of psychological, environmental, and biological factors influencing sport performance, health, and long-term functional capacity. By examining the effects of structured behavioural interventions on motor performance outcomes, the present research contributes to a more integrative and multidisciplinary perspective on athlete development.

Methods

Study Design

This investigation employed a pre-test/post-test randomized controlled design with parallel groups to evaluate the efficacy of the Good Behaviour Game intervention on physical performance parameters. The design enabled causal inference regarding intervention effects while controlling for potential confounding variables through randomization and matched group characteristics (16). The study was conducted over a 6-week period aligned with the standard long jump physical education curriculum cycle, consisting of 12 structured sessions. Following baseline assessments during the first session, the experimental protocol was implemented across the subsequent 11 sessions. A sex-stratified block randomization procedure ensured balanced gender distribution across experimental conditions. Group allocation was concealed from outcome assessors to minimize detection bias, strengthening the methodological rigor.

Participants

Forty middle school students (age: 13.10 ± .40 years) from a public school in Sfax region were recruited through purposive sampling. Participants were equally distributed between an experimental group (n = 20; 10 males, 10 females) receiving the GBG intervention and a control group (n = 20; 10 males, 10 females) participating in standard physical education sessions. Sample size was determined using G*Power software (version 3.1.9.7) with the following parameters: effect size f = .25 (medium effect), $\alpha = .05$, power $(1-\beta) = .80$, and accounting for potential 20% attrition, requiring a minimum of 36 participants. Inclusion criteria comprised: [1] age 12-14 years; [2] regular physical education participation; [3] no previous GBG exposure; [4] medium-level long jump performance at baseline; and [5] parental consent and participant assent. Exclusion criteria included: [1] musculoskeletal injuries within six months; [2] medical contraindications to physical activity; [3] cognitive impairments affecting instruction comprehension; and [4] specialized athletic training outside school.

Prior to group allocation, a comprehensive pre-evaluation was conducted with 67 students (31 girls, 36 boys) to establish baseline long jump performance. Performance thresholds were established for boys (medium threshold: 1.59m ≤ distance ≤ 2.01m) and girls (medium threshold: 1.29m ≤ distance ≤ 1.77m). Only students performing within the medium threshold were selected to ensure homogeneous baseline competency, which may limit the generalizability of the findings to all ability levels and should be considered when interpreting the results.

The study protocol was approved by the local institutional ethics committee of the Higher Institute of Sport and Physical Education of Kef, Tunisia (C-0010/2024 – September 19th, 2024) and was conducted in accordance with the Declaration of Helsinki. Written informed consent from parents/guardians and verbal assent from participants were obtained.

Reliability Assessment

A methodological pilot study was conducted with eleven participants (6 males and 5 females; age: 13.00 ± .30 years) who were not included in the main study to evaluate the inter-session reliability of jump performance measurements. This preliminary phase helped refine assessment protocols and establish measurement stability for the main investigation (17).

Intervention Protocol

The experimental group received the GBG intervention during 11 sessions (twice weekly), integrated into their regular physical education curriculum. At each session, the teacher reinforced key game rules and organized the class into balanced teams.

Game procedures included monitoring performance, recording rule violations on a visible scoreboard, and awarding brief reinforcement periods to winning teams.

Detailed teacher training sequences and equipment settings have been abbreviated to improve manuscript flow, while essential fidelity information is retained. Intervention fidelity averaged 92.73% (range: 80–100%).

Outcome Measures and Data Collection

Long jump performance was evaluated through two primary metrics: [1] jump distance, horizontal distance from take-offline to nearest break in landing area; and [2] successful jumps, defined as the number of technically valid attempts from three trials, selected to provide a qualitative assessment of motor skill execution and adherence to long jump technique. Performance assessments occurred during first (pre-intervention) and final (post-intervention) sessions (18).

Video recording and Kinovea analysis procedures have been summarized to maintain essential methodological information while improving readability.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics (version 29.0 IBM SPSS Statistics, Chicago, IL, USA) and R (version 4.2.0, R Foundation for Statistical Computing, Vienna, Austria) with the 'lme4' package. Analytical procedures were designed to capture both quantitative (jump distance) and qualitative (successful jumps) changes over time, while accounting for sex and group interactions. Reliability was assessed using intraclass correlation coefficient (ICC 2,10) with 95% confidence intervals for relative reliability, coefficient of variation (CV%) for measurement variability, and standard error of measurement (SEM) for absolute reliability. The minimal detectable change at 95% confidence level (MDC95) was calculated as SEM × 1.96 × √2 (19).

For primary analysis, a 2×2×2 mixed-design ANOVA was employed with two between-subjects factors (group, sex) and one within-subjects factor (time). Effect sizes were quantified using partial eta squared (η_p^2) with conventional thresholds: small (.01-.05), medium (.06-.13), and large (≥.14). For significant interactions, Bonferroni-adjusted pairwise comparisons were conducted. Relative performance changes were calculated as percentage improvements. Between-group differences were evaluated using Cohen's d effect sizes. Statistical significance was established at $p<0.05$, with 95% confidence intervals calculated for all primary outcomes (4).

Results

Participant Characteristics and Reliability Assessment

The study included 40 participants (20 males, 20 females; age: 13.10±.40 years) equally distributed between experimental (n=20) and control groups (n=20), with 10 males and 10 females in each group. Baseline assessment confirmed homogeneity between groups in jump distance performance prior to intervention ($P>.05$).

Table 1. Inter-session reliability of long jump performance parameters.

Parameter	Test Session 1	Test Session 2	ICC (95% CI)	CV (%)	SEM	MDC_{95}
Jump Distance (m)	1.68 ± .23	1.71 ± .25	.94 (.87-.98)	3.20	.07	.19
Successful Jumps (n)	1.64 ± .67	1.73 ± .65	.89 (.75-.96)	11.30	.22	.61

Note: ICC = intraclass correlation coefficient; CV = coefficient of variation; SEM = standard error of measurement; MDC95 = minimal detectable change at 95% confidence level. ICC interpretation: <.50 = poor, .50-.74 = moderate, .75-.89 = good, ≥.90 = excellent reliability.

The reliability analysis revealed excellent inter-session reliability for jump distance (ICC=0.94, 95% CI [.87-.98]) with low coefficient of variation (CV=3.20%) and minimal measurement error (SEM=.07 m). The number of successful jumps demonstrated good reliability (ICC=.89, 95% CI [.75-.96]), with acceptable variability (CV=11.3%, SEM=.22 jumps). The minimal detectable change at 95% confidence level (MDC95) was .19 m for jump distance and .61 jumps for successful jumps, establishing thresholds for determining meaningful intervention-induced changes (Table 1).

Effect of GBG Intervention on Jump Distance

The mixed ANOVA revealed a significant three-way interaction effect (Group × Sex × Time: $P=.046$, $\eta_p^2=.106$), indicating differentiated intervention effects by sex. Significant two-way interactions were observed for Group × Time ($P<.001$, $\eta_p^2=.469$) and Sex × Time ($P=.005$, $\eta_p^2=.202$). Main effects were detected for Time ($P<.001$, $\eta_p^2=.887$), Group ($P=.005$, $\eta_p^2=.196$), and Sex ($P<.001$, $\eta_p^2=.568$) (Figure 1A).

Bonferroni-corrected post-hoc analyses demonstrated significantly greater improvement in the experimental group compared to controls across both sexes. Male participants in the experimental group improved by .54 m (95% CI [.47, .61]),

Table 2. Descriptive statistics and within-group changes in jump distance and number of successful jumps by group and sex.

Outcome Measure	Group	Sex	Pre-Intervention	Post-Intervention	Absolute Change	% Change	p-value	Effect Size (d)
Jump Distance (m)	Control	Male	1.79 ± .20	2.10 ± .16	.31 ± .08	17.30	<.001	1.70
		Female	1.56 ± .24	1.82 ± .22	.26 ± .10	16.70	<.001	1.13
	Experimental	Male	1.78 ± .16	2.31 ± .17	.53 ± .13	29.80	<.001	3.20
		Female	1.55 ± .19	1.98 ± .25	.43 ± .08	27.70	<.001	1.96
Successful Jumps (n)	Control	Male	1.70 ± .48	2.30 ± .48	.60 ± .52	35.30	.002	1.25
		Female	1.40 ± .52	1.90 ± .32	.50 ± .53	35.70	.003	1.15
	Experimental	Male	1.90 ± .57	3.00 ± .00	1.10 ± .57	57.90	<.001	2.74
		Female	1.40 ± .70	2.80 ± .42	1.40 ± .70	100	<.001	2.38

representing a 30.3% increase, versus a 16.9% increase (.30 m, 95% CI [.25, .35]) for control males (Cohen's d=2.10). Similarly, experimental females improved by .45 m (95% CI [.38, .52]), a 30.0% increase, compared to 16.8% (.26 m, 95% CI [.19,.33]) in control females (Cohen's d=1.91).

While males demonstrated greater absolute jump distances than females at both time points ($P<.001$), the relative improvement percentage from the GBG intervention was remarkably similar between sexes (30.3% vs. 30.0%, $P=.913$), indicating comparable intervention effectiveness regardless of sex (Table 2).

Effect of GBG Intervention on Successful Jumps

For successful jumps, the three-way mixed ANOVA revealed no significant three-way interaction (Group × Sex × Time: $P=.522$, $\eta_p^2=.011$), indicating consistent intervention effects across sexes. Significant two-way interactions were observed for Group × Time ($P<.001$, $\eta_p^2=.381$). Main effects were detected for Time ($P<.001$, $\eta_p^2=.617$) and Group ($P<.001$, $\eta_p^2=.284$), but not for Sex ($P=.676$, $\eta_p^2=.005$).

The experimental group achieved a significantly greater increase in successful jumps (from 1.65±.67 to 2.90±.31) compared to the control group (from 1.55±.51 to 2.10±.45 m), with a large effect size (Cohen's d=2.08). Notably, females in the experimental group demonstrated a pronounced improvement of 100% (1.40±.70 to 2.80±.42 m), while males improved by 57.9% (1.90±.57 to 3.00±.00 m). Despite these numeric differences, sex differences in intervention response were not statistically significant ($P=.418$), confirming intervention effectiveness across both sexes (Figure 1).

Table 3. Between-group differences in changes from pre- to post-intervention by sex.

Sex	Outcome Measure	Mean Difference (Experimental - Control)	95% CI	p-value	Effect Size (d)	Interpretation
Male	Jump Distance (m)	.22	[.12, .32]	<.001	2.10	Large
Male	Successful Jumps (n)	.50	[.05, .95]	.026	1.03	Moderate
Female	Jump Distance (m)	.17	[.09, .25]	<.001	1.91	Large
Female	Successful Jumps (n)	.90	[.42, 1.38]	.001	1.77	Large

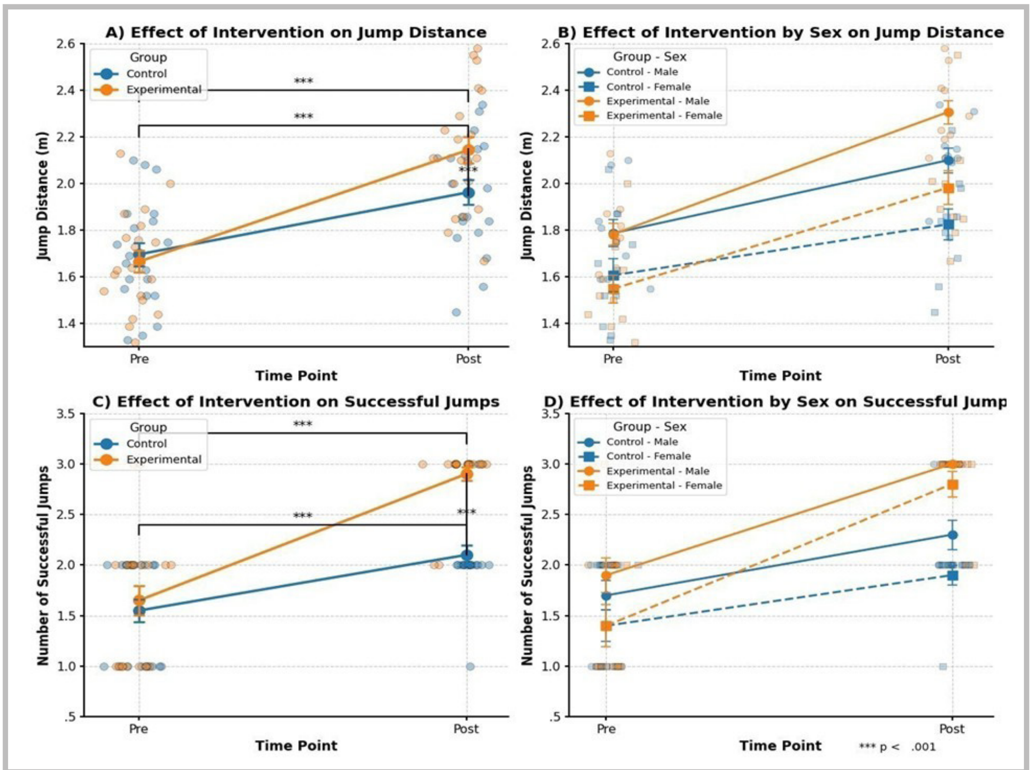

Figure 1. Effects of Good Behaviour Game intervention on physical performance metrics in middle school students.

Between-Group Differences in Performance Improvements

Table 3 quantifies the between-group differences, confirming substantial advantages conferred by the GBG intervention. The mean difference in jump distance improvement between experimental and control participants was significant for both males (.22 m, 95% CI [.12, .32], d=2.10) and females (.17 m, 95% CI [.09, .25], d=1.91). For successful jumps, the intervention advantage was moderate in males (.50 jumps, 95% CI [.05, .95], d=1.03) but notably pronounced in females (.90 jumps, 95% CI [.42, 1.38], d=1.77) (Figure 1B and Figure 1D).

Figure 1 visually confirms these statistical findings, illustrating both the main effect of the intervention and its consistency across sex groups. The pattern of superior improvement in the experimental group is evident across all analyses, supporting the robust efficacy of the GBG intervention regardless of participant sex, while also revealing the particularly strong effect on successful jumps among female participants.

Discussion

The present study investigated the effects of the Good Behaviour Game (GBG) on specific physical performance metrics during long jump activities within physical education sessions. The findings revealed significant improvements in both jump distance and successful attempts following GBG implementation, with large effect sizes observed across both outcome measures. Recent research highlights that motor adaptation and exertion-induced neuromuscular modulation contribute substantially to performance improvements in structured interventions (20).

Effects on Jump Distance Performance

The substantial improvement in jump distance performance among GBG participants represents a key finding of this investigation. The experimental group demonstrated significantly greater gains (males: 30.30%, females: 30%) compared to controls (males: 16.90%, females: 16.80%), with large between-group effect sizes (males: d= 2.10, females: d= 1.91). These gains appear larger than those typically reported in standard physical education interventions, which often range from 5-15% for similar motor skills over comparable timeframes (21). However, direct comparisons should be interpreted cautiously, given differences in study design, instructional context, and outcome measures. The observed improvements surpassed the established minimal detectable change threshold (.19 m), confirming their clinical and practical significance beyond measurement variability.

These findings align with preliminary evidence suggesting that behavioural interventions may contribute to enhanced physical performance outcomes (22). While previous GBG investigations in physical education contexts have primarily documented increased general activity levels through step count metrics (8,9), this study extends these findings by demonstrating performance enhancement in a specific skill-based activity requiring complex motor coordination. This distinction is important because improvements in general physical activity do not necessarily translate into enhanced performance in technical skills (6).

Effects on Technical Execution

The significant improvement in successful jumps represents perhaps the most striking finding of this investigation. The experimental group exhibited a remarkable increase in technically valid jumps (males: 57.90%, females: 100%) compared to more modest gains in the control group (males: 35.3%, females: 35.70%). This disproportionate improvement in technical execution suggests the GBG may be particularly effective in enhancing qualitative performance dimensions, especially requiring precise movement patterns and rule adherence (23). The validity and reliability of sport-specific motor tests provide methodological support for using "successful jumps" as a robust indicator of movement quality (18).

The substantial improvement observed in female participants' successful jump rate, doubling from baseline levels, should however be interpreted with caution. Although females showed numerically greater gains than males, the sex × group interaction was not statistically significant, indicating that these differences cannot be considered conclusive. This hypothesis warrants further investigation in larger samples.

Motivational and Theoretical Mechanisms

Several theoretical mechanisms may help explain the observed performance enhancements. A plausible explanation lies in the motivational structure embedded within the GBG as an interdependent group contingency. This structure fosters shared responsibility and mutual encouragement among team members (24). Students were incentivized not only to comply with rules but to optimize their performance for their team's collective success. This may have contributed to increased focus, effort, and persistence during task execution. Additionally, monitoring of physiological and neuromuscular responses during exercise has been shown to reflect responsiveness to performance interventions (25), supporting our interpretation of intervention-induced gains.

The GBG broke from traditional didactic teaching models by introducing elements of autonomy, competition, and engagement. These elements have been shown to increase students' enjoyment and active participation in physical education (26). Although motivation was not directly measured in the present study, framing skill acquisition within a game-like format may have supported motivational processes relevant to motor learning and performance improvement.

Furthermore, the GBG's publicly visible performance tracking mechanism may have stimulated positive peer influence, consistent with findings that the GBG can cultivate constructive social reinforcement rather than negative peer interactions (27). By establishing clear behavioural expectations directly linked to performance parameters, the GBG transformed abstract technical instructions into concrete, observable behaviours with immediate consequences. This structure may have enhanced task focus and execution quality (13).

Contextual Adaptation of the GBG

Notably, the version of the GBG employed in this study was intentionally and specifically adapted to the context of long jump instruction. Rule violations corresponded directly to technical execution errors rather than general classroom misbehaviour. Rules were directly aligned with the technical requirements of the activity (maximum approach effort, proper take-off technique, and landing execution), and penalties were given for violations of key execution criteria (25). This alignment appears to be a critical condition for the observed performance effects, as it ensured that behavioural contingencies reinforced skill-relevant actions rather than generic compliance.

These targeted adaptations are consistent with literature indicating that GBG effectiveness can be maintained, even enhanced, through context-sensitive modifications (3). Without such adaptation, the GBG may primarily influence behaviour and engagement, without necessarily producing measurable gains in motor skill execution. Research using kinematic and biomechanical analyses has demonstrated that improvements in technical performance depend on repeated exposure to task-specific constraints rather than generic behavioural reinforcement (28). This distinction is essential for practitioners seeking to apply the GBG for performance-oriented learning objectives.

The increased engaged learning time may have provided more practice opportunities and instructor feedback moments, critical factors in motor skill development (29). The interaction between social reinforcement, clarified performance expectations, and increased practice time likely contributed to the observed performance improvements.

Sex-Differentiated Responses

The comparable relative improvement in jump distance between males and females (30.30% vs. 30%) indicates the GBG's effectiveness transcends sex differences in baseline physical capabilities. This finding challenges concerns that behaviourally oriented interventions may yield sex-dependent effectiveness.

While females exhibited numerically greater improvements in successful jumps, these differences did not reach statistical significance. Therefore, they should not be interpreted as evidence of superior responsiveness. Instead, the observed sex-related patterns should be considered exploratory, particularly in light of the modest sample size. Future studies with larger and more diverse samples are needed to determine whether sex-related differences exist in responsiveness to GBG interventions, especially for technical execution outcomes. These preliminary observations align with literature suggesting that social reinforcement dynamics within interdependent group contingencies may differentially influence engagement and precision, a proposition that remains to be empirically confirmed 7.

Limitations

Several limitations warrant consideration when interpreting these findings. First, the relatively small sample size (n = 40) potentially limits statistical power for detecting subtle interaction effects. Second, the six-week intervention duration precludes conclusions regarding long-term maintenance of performance gains. Third, motivation—although likely a key mechanism driving performance improvements—was not formally assessed. As a result, the role of motivational processes remains speculative without objective measures, such as validated motivation scales. Fourth, the same PE teacher delivered both experimental and control sessions, introducing the possibility of teacher expectancy effects influencing student performance. Fifth, students' familiarity with the testing environment may have affected performance outcomes. Finally, all sessions were video-recorded, which could have produced a Hawthorne effect, whereby participants altered their behaviour due to awareness of being observed. Additionally, although measurement reliability was high, future studies could further triangulate performance assessment using complementary physiological or neuromuscular monitoring tools to better capture intervention responsiveness (25).

The study focused exclusively on an individual athletic task. This limits generalizability to team-based sports, where social dynamics may play a larger role (30). The present findings support the development of advanced diagnostic and intervention models that combine behavioural strategies with objective performance assessment and emerging measurement technologies. Such an approach is consistent with multidisciplinary frameworks aimed at optimising talent identification and development, monitoring biological and functional status, and designing personalised protocols for enhancing both performance and long-term health outcomes. Accordingly, this study provides a relevant conceptual and applied contribution to the advancement of evidence-based methodologies in physical education, youth sport development, and longevity-oriented research

Practical Applications

Physical education practitioners should consider implementing the GBG as an integrated strategy for simultaneously enhancing both behavioural engagement and physical performance outcomes. Crucially, the GBG should be adapted so that rule violations correspond directly to technical execution errors specific to the targeted motor skill, rather than to general classroom behaviour. Without this alignment, performance-related benefits may be attenuated.

Implementation should emphasize clear articulation of performance-oriented rules directly linked to technical execution parameters rather than general compliance behaviours. The team formation process should prioritize balanced competency distribution to activate positive peer modelling dynamics (31). Performance tracking mechanisms should incorporate both quantitative metrics and qualitative execution parameters. This approach allows for comprehensive reinforcement of desired outcomes. Using validated and reliable sport-specific performance indicators further strengthens the instructional and evaluative value of such interventions (18). Regular reinforcement should be provided through appropriate, student-valued rewards contingent upon team performance. For optimal effectiveness, teachers should receive systematic implementation training with fidelity monitoring to ensure consistent application across sessions.

Conclusions

This study provides compelling evidence that the Good Behaviour Game significantly enhances both quantitative and qualitative dimensions of long jump performance among middle school students during physical education sessions. The observed improvements exceeded gains typically reported in standard physical education interventions. By transforming behavioural expectations into clear, game-based challenges, the GBG fosters a more focused learning environment. This environment appears to support both behavioural regulation and motor skill development. The GBG represents a valuable, evidence-based tool for physical educators seeking to optimize student outcomes across multiple educational dimensions, effectively combining behavioural reinforcement with motor learning to promote holistic student development in school-based physical activity programs.

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Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Ethical Committee approval

The Higher Institute of Sport and Physical Education of Kef, Tunisia (C-0010/2024 – September 19th, 2024).

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Topic

Sport Pedagogy

Conflicts of interest

The authors declare no conflicts of interest.

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Author-s contribution

Conceptualization, O.T. and W.D.; methodology, O.T., W.D. and A.B.O.; software, W.D.; validation, O.T., W.D. and A.B.O.; formal analysis, W.D.; investigation, O.T. and A.B.O.; resources, J.P.; data curation, W.D.; writing—original draft preparation, O.T., A.B.O., A.F., and W.D.; writing—review and editing, A.L. and A.O.; visualization, A.F. and W.D.; supervision, J.P.; project administration, O.T.; funding acquisition, J.P. All authors have read and agreed to the published version of the manuscript.

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