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Original Article

The effects of teaching style and motor skills on 100-m running results: A factorial experimental design

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Abstract
Background: Several studies have examined the effects of teaching style on 100 m sprint performance. However, motor skills are rarely incorporated into these studies, and their levels are not systematically classified. **Purpose:** This study aimed to determine (1) the difference between self-check teaching style and practice-based teaching style, (2) the performance difference between individuals with high and low motor skills, and (3) the interaction between teaching style and motor skill level in influencing 100-m sprint result. A factorial experimental design was used to analyze these relationships. To achieve the goals, participants fell into the teaching style group (divided into self-check and practice-based) and motor skills groups (categorized into high and low). **Materials and Methods**: The study employed a 2x2 factorial experimental design involving 40 second-grade students aged 15 to 16 from Senior High School 2 Tondano, Indonesia. Over six weeks, participants engaged in three weekly sessions focusing on 100-meter sprint training. Performance was assessed using the Barrow Motor Ability test and a stopwatch to measure sprint results. Statistical analysis, including two-way ANOVA with a significance threshold of 0.05, was conducted via SPSS 25. **Results:** The results suggest that (1) there was no significant difference in the effect between the self-check and practice-based teaching styles, as the results of running 100 meters were F count = 2.163, Sig. 0.150 ($p > 0.05$) at the significance level α 0.05. However, (2) a significant difference was found between high and low motor ability (F count = 34.148. Sig. 0.000 at the significance level α 0.05). Similarly, (3) an interaction between teaching style and motor skills level was also found in running 100 meters (F count = 4.627, Sig. 0.038 at the significance level α 0.05. **Conclusions:** While teaching style alone did not significantly affect sprint outcomes, motor skill level served as a determinant of performance. Additionally, teaching style interacted significantly with motor skill level. These findings indicate the importance of adjusting teaching strategies to students' motor abilities for optimal sprint performance.
Keywords: teaching style, motor skills, 100-meter sprint, performance, education methodology.

Introduction

The 100-meter run is one of the athletic events that require specific physical components, particularly speed, leg power, and overall body strength (Haugen et al., 2019; Healy et al., 2022; Purwanto et al., 2021; Rusli et al., 2024). It is a central component of competitive athletics, with participants ranging from school-level athletes to elite competitors (Aksović et al., 2021; Haugen et al., 2019; Karp, 2024; Ramabaja et al., 2021). With this diversity, coaching given as early as possible to young athletes can facilitate better performance outcomes and help them reach elite levels in the future (Seidl et al., 2021). However, there is ongoing debate regarding the appropriate methods for training young athletes, particularly in athletics (Merkel, 2013), which poses challenges for Physical Education (PE) teachers (Malý et al., 2015)

Schools play a crucial role in developing foundational sports skills that serve as a basis for high-performance achievements (Izzo et al., 2023). Therefore, physical education and sports programs in schools are key to supporting the success of athletic coaching programs, particularly in events like the 100-meter dash (Balyi et al., 2013; Beale et al., 2021). Achieving success in sprinting events, particularly the 100-meter dash, requires consideration of multiple contributing factors. These factors can be categorized as internal factors, intrinsic to the individual (motivation, interest, talent, intelligence, and motor abilities) and external factors (social environment, sports facilities and infrastructure, the physical education curriculum, teachers, and the teaching methods employed). To achieve optimal skill development in the 100-meter sprint, PE teachers must carefully select appropriate teaching methods or styles. According to earlier scholars, teaching style is critical to learning success

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(Davis, 2018; Sicilia-Camacho & Brown, 2008). Generally, the effectiveness of a PE teacher in delivering instruction is significantly influenced by their choice of teaching style, such as self-check or practice-based teaching methods. There are 11 teaching styles commonly used by Physical Education teachers, as outlined by (Mosston & Ashworth, 2008). These are: Command Style (A), Practice Style (B), Reciprocal Style (C), Self-Check Style (D), Inclusion Style (E), Guided Discovery Style (F), Convergent Discovery Style (G), Divergent Production Style (H), Learner's Individually Designed Program Style (I), Learner-Initiated Style (J), and Self-Teaching Style (K). Among them, the Self-Check Style (D) is considered one of the most effective styles for improving sports performance. Thus, it is taken in this research. The key component of this style is having students evaluate their performance independently based on several criteria established by the teacher. Rather than relying on the teachers' feedback, this approach encourages students to make decisions based on their self-assessment. The main characteristic of this style is having students evaluate their own performance. Additionally, they need to identify criteria for improving skills and adopt an objective attitude toward performance. Other characteristics include acknowledging limitations and making new decisions about the lesson during or after the learning session. When done properly, this style has some implications, such as encouraging students' autonomy, promoting self-monitoring and self-improvement, and using self-feedback as a basis for progress. Another style taken in this research is the Practice Style (B), the second style in Mosston's spectrum of teaching styles. A key characteristic of this style is giving students time to complete tasks individually while the teacher provides feedback on their performance in a personalized manner. In this approach, the teacher demonstrates the movement or skill taught, for example, an overhand serve in volleyball. The practice style is designed to improve students' skills by assigning tasks that require repeated practice. The goal is to allow students to gradually enhance their motor skills through consistent repetition. Although both styles have promising advantages, they might have some differences. In the self-check style, for instance, students should rely on their self-assessment during practice, fostering autonomy. However, in the practice-based style, feedback is provided directly by the teacher, which can limit the time students have for independent practice. These differences are provided in Table 1.

Table 1. Comparison Between Self-Check Style and Practice Style in Teaching

No.	Self-Check Style	Practice Style
1	Perform tasks based on the task sheet provided (no example given by the teacher).	Perform tasks after observing an example demonstrated by the teacher.
2	Provide self-feedback.	Feedback is provided by the teacher.
3	Students evaluate their performance based on criteria set by the teacher.	The teacher evaluates the student's performance.
4	Allow for adjustments based on individual differences.	Ensure uniformity in performance.
5	Encourage student independence.	Promote group spirit.
6	Provide greater opportunities for students to develop their approaches to tasks.	Emphasize shared key points that can be replicated by others.

The purpose of a teaching style is to design instruction that aligns with the desired objectives, ensuring optimal teaching outcomes. As previously mentioned, the self-check and practice-based styles are effective teaching methods when applied to the same material. However, their implementation differs (Malý et al., 2015). Consequently, it is hypothesized that these two teaching styles may produce different effects on 100-meter sprint performance. While employing the appropriate teaching style is important, the right approach must also match the motor skill levels of students. Scholars argue that motor abilities vary among students when performing the 100-meter sprint (Rashiti et al., 2021). This event requires a high level of motor skills, making individual differences in motor ability a critical factor. Motor ability refers to an individual's overall capacity to perform fundamental movements, encompassing innate and acquired skills essential for physical performance (Podstawski et al., 2020; Zećirović et al., 2022). It serves as a critical baseline for assessing students' capabilities in physical education, forming the foundation for developing athletic skills such as sprinting. School-based physical activity programs enhance students' motor abilities by providing structured practice opportunities, significantly improving movement proficiency, particularly among young athletes (Redublado et al., 2023). In physical education settings, students present varying motor ability levels, directly impacting their learning outcomes and athletic performance. Those with high motor ability tend to demonstrate greater movement proficiency, allowing them to acquire new skills faster than their peers with lower motor ability (Silverman & Mercier, 2015; Yendrizal et al., 2023). Higher motor ability is closely linked to improved coordination, strength, and agility, all of which are crucial for mastering the technical aspects of the 100-meter sprint (Di Domenico et al., 2019; Iorga et al., 2023; Khairuddin et al., 2022). Conversely, students with lower motor ability often face challenges executing motor tasks. These students typically require more practice, additional instructional support, and targeted feedback from educators, including verbal instructions and physical demonstrations (Zhou et al., 2021). Given these disparities, it is reasonable to hypothesize that motor ability significantly influences sprint performance. Students with higher motor ability will likely achieve superior results due to their capacity to assimilate and apply movement techniques more effectively. This study explores the combined effects of teaching styles and motor abilities on 100-meter sprint performance. Two teaching approaches are compared: the self-check Style, which fosters student autonomy and self-assessment (Mosston & Ashworth, 2008), and the practice-based style, which emphasizes guided repetition and structured feedback (Bosse et al., 2015; Monacis et al., 2023). The study examines how these factors influence sprint performance by categorizing motor ability into high and low levels. The findings are expected to provide valuable insights for optimizing teaching strategies in physical education, helping educators tailor their methods to accommodate students' diverse motor abilities better and improve athletic outcomes.

Materials and Methods

Study design

This research used an experimental approach with a 2 x 2 factorial design. The approach was primarily designed to investigate the effect of specific treatment on others under controlled conditions incorporating a variety of variables. In this context, teaching style (A) was used as an independent variable, with the 100-meter run result and motor skills serving as dependent and moderate variables. It consisted of two types of teaching styles: self-check (A1) and practice-based (A2). The second variable was motor skills (B), which was split into two categories: high (B1) and low (B2). A clearer illustration of the research design is provided in Table 2.

Table 2. The two-way factorial ANOVA design.

Motor Skills (B)	Teaching style (A)	
	Self-check (A1)	Practice-based (A2)
High (B1)	A1B1	A2B1
Low (B2)	A1B2	A2B2
Total	A1	A2

Participants

This research involved male student samples from the second grade of Senior High School 2 Tondano in the academic year 2023/2024. Ethical approval was received from the ethics committee at Manado State University prior to commencement of the research. They were all 15 - 16 years old. The participants were randomly recruited from 130 students in the research population.Then,74 male students who complied with the criteria were chosen. The criteria were (1) having an equivalent level of skills, (2) being male, (3) being aged 15 – 16 years, and (4) not temporarily following exercises in various club sports. Of these 74, only 40 were randomly selected as final participants using a purposive random sampling technique. The final participants signed a written agreement indicating their participation in volunteering in addition to a requirement for research administration. On average, the participants' age was 15.6 ± 6.4 years. Meanwhile, the body weight was 47.7 ± 2.42, height was 147.3 ± 3.22 cm, and BMI was 20.45 ± 1.15.

Procedure

Distribution of treatment groups

A pre-test was conducted for 74 students to test motor skills, and their outcomes were arranged based on ranking. To determine the ability of good and bad categories, as well deciding of two-way ANOVA group design, this research employed a percentage technique (Miller, 2008). For example, 27% was classified into the upper limit to represent the high achiever group, and 27% fell to the lower limit for those representing the low-score group. As a result, there were 20 students in each group style (27% x 74 = 19.98 rounded up to 20) with good and poor levels of abilities. The 20 students in each category were then randomized again to obtain four groups of 10 students. Two groups fell to high and low for self-check style, and the other two in the high and low for practice style. The remaining candidates' samples obtained scores between group top and bottom (35 people), which were not included in the research (See Table 3). Participants were divided into 4 groups: A1B1, A1B2, A2B1, and A2B2. Illustration sampling can be done, as seen in Figure 1.

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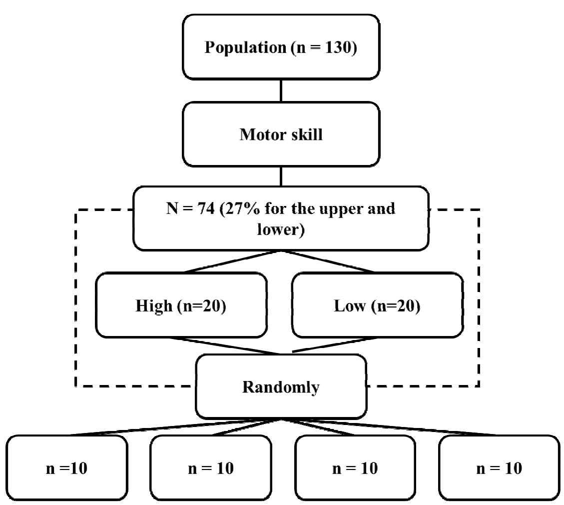

Figure 1. The flow of treatment group assignments in the research

Table 3. The sample size for each treatment group

Motor Skills (B)	Teaching style (A)				Total (n)
	Self-Check Teaching Style (A1)	*n*	Practice-Based Teaching Style (A2)	*n*	
High (B1)	A1B1	10	A2B1	10	20
Low (B2)	A1B2	10	A2B2	10	20
Total	A1	20	A2	20	40

Teaching Style Treatment

This study implemented a teaching style intervention to address the need for improved motor skill development that combined self-check and practice methods. Over six weeks, participants engaged in two sessions per week, resulting in 12 lessons. Each session was structured to include a 10-minute warm-up featuring static and dynamic exercises before transitioning to the main intervention based on the self-check teaching style. Meanwhile, students maintained regular technical training to ensure skill retention and consistency.

In line with the principles of speed training, the progression of the training load was carefully planned to emphasize explosive execution. The training intensity was initially increased incrementally each week until the third consecutive week. However, to ensure recovery and preparation for further progression, deliberate reductions in training load were introduced during specific weeks. For example, in the fourth week, the training dose was reverted to match the second week, a strategy designed to align with principles such as overload, progression, and individualization. This cycle of escalation and recovery continued through the eighth week, after which a post-test was conducted to evaluate the intervention's effectiveness.

When shifting focus to the 100-meter sprint, the Practice-based Style followed a similar timeline, extending over six weeks with two sessions per week (12 lessons in total). Each session lasted between 55 and 65 minutes. Classes were randomly assigned to single-gender groups to ensure methodological rigour. In this way, lesson content was standardized. The activities were tailored to athletic events, supported by structured lesson plans, and complemented by teaching materials provided to students. Furthermore, the athletics curriculum structured activities in thematic blocks, typically 8–10 weeks, to address running, jumping, or throwing events. Sprint training focused on self-check and practice methods, with all sessions conducted on a standardized athletic field to maintain uniformity. Finally, the intensity, volume, and recovery between training sets adhered to speed training principles, emphasizing explosive movements. Each session concluded with a cooling-down phase to promote recovery and reduce fatigue risk. This holistic approach ensured that physical and technical aspects of athletic performance were addressed comprehensively.

Instrument

This study utilized a range of instruments to collect data. Motor skills were assessed using the Barrow Ability Test, with high validity (0.85) and reliability (0.970) (Barrow, 1979). The performance in the 100-meter run was measured using two complementary instruments. First, running speed was assessed with a stopwatch featuring 0.1-second accuracy, yielding a validity score of 0.93. This validity score was categorized as excellent. Reliability for the stopwatch measurements was calculated using the product-moment correlation formula, with a resulting reliability score of 0.94. Second, the overall 100-meter run outcomes were evaluated using a standardized test, which achieved a reliability rating of 0.90, indicating a high level of consistency.

Statistical Analysis

This research employed two types of analysis: descriptive statistics and inferential statistics. Descriptive statistics were first computed using Microsoft Excel to provide an overview of the outcome variables for each experimental group. Inferential analysis was then conducted using IBM SPSS (Version 25), with a two-way analysis of variance (ANOVA). It was employed to evaluate the effects of teaching style and motor skill level on sprint performance. A significance level of $\alpha = 0.05$ was adopted for all statistical tests. The Tukey post hoc test was subsequently applied to examine pairwise differences among group means. Prior to hypothesis testing, assumptions underlying the ANOVA were verified. Data normality was assessed through standardized residual values, while the assumption of homogeneity of variances was tested using Levene’s test. These preliminary analyses ensured the conditions necessary for valid ANOVA application were met. The statistical hypotheses guiding this analysis were as follows:

First Hypothesis

H_0: $\mu A_1 = \mu A_2$ (The mean performance for the self-check group equaled that of the practice group).

H_1: $\mu A_1 > \mu A_2$ (The mean performance for the self-check group exceeded that of the practice group).

Second Hypothesis

H_0: $\mu B_1 = \mu B_2$ (The mean performance for the high motor skill group equaled that of the low motor skill group).

H_1: $\mu B_1 > \mu B_2$ (The mean performance for the high motor skill group exceeded that of the low motor skill group).

Third Hypothesis

H_0: Interaction (A x B) = 0 (No interaction between exercise methods and motor skill levels).

H_1: Interaction (A x B) $\neq$ 0 (There is an interaction between exercise methods and motor skill levels).

Note: H_0 represents the null hypothesis, while H_1 refers to the alternative hypothesis. μA_1 denotes the mean 100-meter running performance for the self-check training group, and μA_2 represents the mean for the practice group. The notations μA_1B_1, μA_2B_1, μA_1B_2, and μA_2B_2 correspond to subgroup averages for high and low motor skill groups under the two training methods (self-check and practice). A refers to training methods, and B to motor skill levels.

Results

Data description

Before presenting two-way ANOVA results, the following table shows the average 100-meter running results across the various groups (Table 4).

Table 1. Description of data on the increase of results 100 meter run in students

Teaching Style	Level of Motor Skills	M	SD	N
Self-check	• High (A1B1)	103.890	2.023	10
	• Low (A1B2)	101.356	1.860	10
	Total	102.623	1.941	20
Practice	• High (A2B1)	98.867	1.624	10
	• Low (A2B2)	98.867	1.919	10
	Total	98.867	1.771	20
Total	• High (B1)	101.378	1.823	20
	• Low (B2)	101.115	1.889	20
	Total	101.246	1.856	40

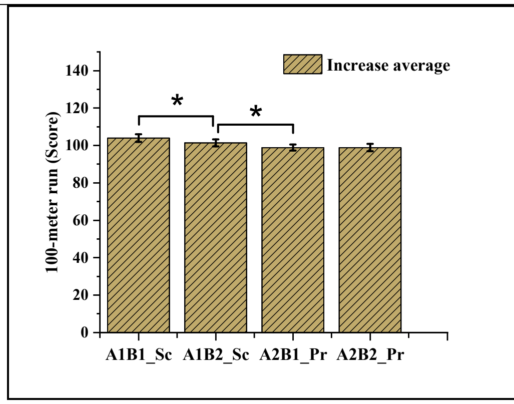

Figure 2. Increase 100-meter run average

The data distribution in this study was assessed for normality using the Kolmogorov-Smirnov test. The analysis was administered using the SPSS software version 25 and confirmed that the data followed a normal distribution, with a Kolmogorov-Smirnov Z value of 0.480 and a p-value greater than 0.05. This result supports the assumption of normality required for further statistical analysis.

Additionally, the homogeneity of variance, a prerequisite for the two-way ANOVA, was evaluated using Levene's test. The analysis yielded an F-value of 0.348 and a p-value greater than 0.05, indicating that the data met the homogeneity assumption. With both normality and homogeneity assumptions satisfied, the data were deemed suitable for the two-way ANOVA analysis. A detailed summary of the results can be found in Table 5.

Table 2. Normality and homogeneity testing

Normality test Kolmogorov-Smirnov			Homogeneity test Levene's		
Z	*df*	*P*	*F*	*df2*	*P*
0.480	40	0.214	0.348	36	0.791

Note: Data is normally distributed and homogeneous (P>0.05).

Table 6 below summarizes the results of the two-way ANOVA analysis.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	173181140 [a]	1	3	57727046.67	16,641	0.00
Intercept	4.060	1	1	1622.400	117030.486	0.00
A	16052890.00	1	1	4.060	4.627	0.00
B	141075360.0	38	1	16052890.00	40.667	0.00
A * B	16052890.00	1	1	16052890.00	4.627	0.03
Error	1248850600	38	36	3469029.444		
Total	4.063	40	40			
Corrected Total	298066200.0	39	39			

Table 6. Results of Two-Way ANOVA for the Effects of Teaching Style (A) and Motor Skill Level (B) on Performance

Note: R Squared = .707 (Adjusted R Squared = 0.691). In this context, A represents teaching style, A1 indicates self-check teaching style, A2 indicates practice-based teaching style, B refers to motor skills, B1 indicates high motor skills, and B2 indicates low motor skills.

Hypothesis 1

In this research, the two-way ANOVA analysis showed a significant difference between the self-check and practice-based styles in improving 100-meter run results. This conclusion was supported by an F-value of 4.627 and a p-value of 0.000, confirming statistical significance ($p < 0.05$). The average improvement in 100-meter run performance with the self-check style was 102.623, higher than the 98.867 improvements observed with the practice-based teaching style. These findings suggest that the self-check style is more effective in enhancing 100-meter run performance. Consequently, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted. It can, therefore, be concluded that there is a significant difference in the effectiveness of the two teaching styles in improving 100-meter run results.

Hypothesis 2

In the second hypothesis, the analysis revealed a significant difference between individuals with high and low motor skills in improving 100-meter run results. The F-value was 40.667, and the p-value was 0.000, confirming this statistical significance ($p < 0.05$). Individuals with high motor skills exhibited a greater average improvement (101.378 ± 1.823) than those with low motor skills (101.115 ± 1.889). These findings indicate that higher motor skills are associated with greater improvements in 100-meter run performance than their lower counterparts. Based on this analysis, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted. It can be concluded that there is a significant difference in 100-meter run improvements between individuals with high and low motor skill levels, with those possessing high motor skills showing greater performance gains.

Hypothesis 3

In the last hypothesis, the two-way ANOVA analysis also demonstrated a significant interaction between teaching style (self-check and practice-based) and motor skill levels in improving 100-meter run results. This was supported by an F-value of 4.627 and a p-value of 0.001, confirming statistical significance ($p < 0.05$). The interaction effect is visually illustrated in Figure 3, indicating that the effectiveness of the teaching styles varies depending on the motor skill level of the participants.

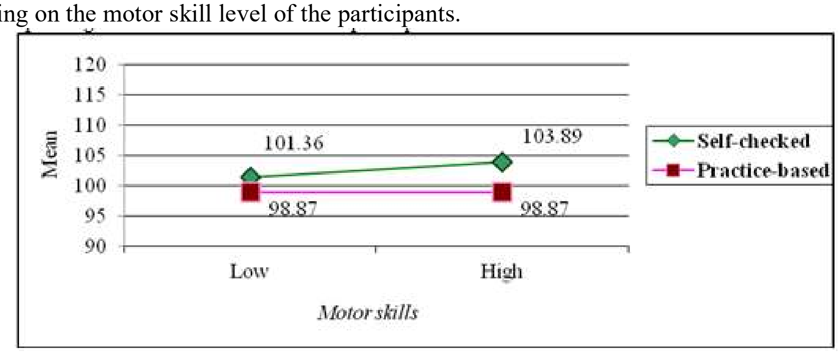

Figure 3. Interaction between teaching style and motor skill levels on the increasing 100-meter running result.

Discussion

The present study employed a factorial experimental design to examine the effects of teaching styles and motor skill levels on 100-meter sprint performance. Specifically, it investigated whether self-check or practice-based instructional strategies yielded superior sprint outcomes, whether high motor skill proficiency had a performance advantage, and whether an interaction existed between teaching style and motor skill level. The findings offer valuable contributions to sports coaching and physical education, particularly in relation to individualized instruction for optimizing athletic performance.

The analysis revealed no significant main effect of teaching style on 100-meter sprint performance. Although the self-check method emphasizes autonomy and self-assessment, and the practice-based approach prioritizes repetition with teacher feedback, neither approach demonstrated superior efficacy. This suggests that both strategies may be comparably effective depending on contextual factors and individual learner profiles. While the teaching style did not exert a direct effect on sprint performance, it may still influence learners' approach to training tasks. The self-check style, for instance, can foster independence and self-regulatory capabilities, attributes beneficial for athletes aiming to refine their techniques autonomously (Beckmann et al., 2023; Sassenberg & Vliek, 2019). Conversely, the practice-based style, which delivers structured guidance, may be more appropriate for novice athletes. These findings support the view that teaching methods in physical education should be adapted to the specific needs and readiness levels of learners (Chaka, 2023; Colquitt et al., 2017). In contrast, the study found a significant effect of motor skill level on sprint performance, with participants possessing higher motor skills outperforming their lower-skilled counterparts. This supports the hypothesis that motor competence is critical in sprinting efficacy. Enhanced motor skills contribute to more efficient movement patterns and better sprint mechanics, culminating in superior performance outcomes (Haugen et al., 2019; Hicks et al., 2019; Rabita et al., 2015). The results indicate the importance of embedding motor skill development such as coordination, agility, and balance into athletic training regimens, particularly during formative years when neuromotor plasticity is high. Finally, a significant interaction between teaching style and motor skill level further enriched the findings. The impact of teaching style varied according to participants' motor abilities, suggesting that instructional effectiveness is moderated by learners' baseline skill levels (García-Hermoso et al., 2020; Han et al., 2018; Tomporowski & Pesce, 2019). For highly skilled athletes, the self-check method may enhance performance by enabling them to capitalize on their existing competencies and engage in nuanced self-assessment. In contrast, individuals with lower motor proficiency may benefit more from practice-based instruction, which provides the external feedback necessary for foundational skill development (Invernizzi et al., 2022; Lin et al., 2022; O'Brien et al., 2023). These results highlight the importance of conducting initial skill assessments before instructional planning and adopting a differentiated pedagogical approach to maximize learning outcomes. These findings have practical implications for physical educators, coaches, and sports practitioners. For example, teaching strategies should be aligned with students' motor skill levels to enhance instructional efficacy. Highly skilled students may thrive in autonomy-promoting environments, while those with lower skill levels may require direct, structured guidance. Instruments such as the Barrow Motor Ability Test can be employed for initial assessment, allowing educators to design tailored instructional pathways. A hybrid teaching approach combining elements of both self-check and practice-based styles could be particularly effective. For instance, educators might begin with structured instruction to establish core competencies, gradually transitioning to autonomy-based strategies as students progress. Additionally, the inclusion of targeted motor skill drills in physical education curricula is essential, given their foundational role in athletic performance. Despite these insights, several limitations must be acknowledged. The study was based on a relatively small sample of 40 male students within a narrow age range, limiting the findings' generalizability. Future research should incorporate larger and more diverse participant samples. Furthermore, the six-week duration of the intervention may have been insufficient to capture long-term effects. Extended intervention periods could yield more comprehensive data on the impact of teaching strategies. The study also did not control for extraneous variables such as motivation, psychological readiness, or environmental conditions, which may influence performance outcomes, encouraging future investigations to cover these factors to offer a more holistic understanding. Since the study focused exclusively on 100-meter sprinting, future research could explore how teaching styles and motor skills influence performance across a broader spectrum of athletic skills and events.

Conclusions

This study shows the critical role of both teaching style and motor skill level in enhancing athletic performance. Although teaching style alone did not yield a statistically significant effect on sprint outcomes, motor skill level emerged as a significant predictor of performance. Moreover, the significant interaction between teaching style and motor skill level highlights the necessity of implementing differentiated instructional strategies in physical education settings. Based on the findings, educators and coaches are encouraged to adopt personalized approaches that align instructional methods with learners' individual abilities. Tailoring teaching strategies to students' motor competencies can facilitate more effective skill acquisition and performance enhancement. Such an approach not only optimizes outcomes in sprinting but may also translate to improvements across a broad range of physical activities. Future research should build upon these findings by examining the impact of instructional methods across diverse sports disciplines and over longer intervention periods. Additionally, the influence of psychological variables (e.g., motivation, self-efficacy) and environmental factors (e.g., training conditions) warrants further exploration to develop a more comprehensive understanding of athletic performance determinants

Conflict of interest The authors report that there is no potential conflict of interest.

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