

## Effects of implementating a hybrid teaching model in a basketball didactic unit

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### Abstract:

The eminent purpose of physical education (PE) is to promote physical fitness, health, and overall well-being among individuals. It aims to develop motor skills, improve cognitive functions, and instill a lifelong appreciation for an active and healthy lifestyle. Physical education also fosters social skills, teamwork, and discipline, contributing to the holistic development of individuals. The study aimed to assess the impact of a hybrid teaching model, integrating elements from the Sport Education Model (SEM) and Teaching Games for Understanding (TGfU), on the performance and motivation of students during basketball lessons. Eighteen adolescents (9 girls and 8 boys) aged 15-17 years (mean  $\pm$  SD: 15.67  $\pm$  0.69 years) participated in the study. Participants engaged in basketball physical education classes twice a week, incorporating principles and attributes from both TGfU and SEM. Motivation and performance (GP) were evaluated before and after basketball sessions. The students' motivation was assessed using the Attitude Questionnaire of Students towards PE, and the performance was measured using the Game Performance Assessment Instrument. The results showed significant improvements in students' GP, but no differences in motivation was found at the end of the instructional unit. However, it was discovered that students enjoyed and appreciated physical education (PE), demonstrating a favorable attitude towards the subject. A hybrid teaching model with principles based on TGfU and SEM seems to be an appropriate approach to enhance students' game understanding, decision-making and overall GP (game skills, both technical and tactical). Attributes and principles such as simulating a sports season and student-centered learning situations that consider individual needs, seems to be important to develop students' awareness of attributing meaning to their actions, resulting in improved GP. The findings could be useful to teachers, coaches and researchers contributing to the development of teaching strategies to empower the PE classes.

**Key Words:** Sport Education, Physical Education, Performance, Motivation

### Introduction

Physical Education (PE) is considered a basilar subject integrated into the school curriculum, able to develop proficient, literary, and passionate persons (Branquinho et al., 2024). PE maximize and empowering opportunities for experimental learning, providing facilitate interaction and communication with pairs. This discipline represents an essential element in education settings, permitting for developing multidisciplinary approaches within the scope of education (Cereda, 2023). Children who possess proficient movement skills tend to enjoy participating in physical activity and/or sports, thus establishing a lifelong connection with physical activity (Stodden et al., 2008). PE contributes to the health of students and positive influencing three main domains: physical, cognitive, and social (Gil-Arias et al., 2020; González-Villora et al., 2019).

The goal of PE is to develop healthy, responsible children who have the knowledge, skills, and attitudes to collaborate, think critically, and engage in diverse activities that promote lifelong wellness (Ferraz et al., 2024). Physical development is integral to building children's self-esteem, confidence, fitness, and overall well-being (Goodway et al., 2009). In the first domain, the benefits are related to physical condition, motor skills and sports proficiency (Pritchard et al., 2008). Regarding to the second domain, discipline can contribute to the increase of the levels of physical activity, improved academic performance, and sustained levels of concentration during tasks (Control, 2006). To the third domain, PE can provide a helpful context where students can acquire principles rooted in

ethical and moral values, such as respect, honesty, and the spirit of cooperation. These invaluable qualities, included in the PE context, have a positive influence on students' social conduct contributing to the integral formation of responsible and commendable citizens (Jung et al., 2016; Rahimjanovna, 2020). To summarize the above mentioned, the development of motor skills is necessary, but also psychosocial valences need to be considered into the learning process. In this sense, the teachers should have a deep understanding of those areas and choose efficient pedagogical strategies to be successful in transmitting these values (Roberts, 2014). Furthermore, the success of physical education is mainly related to the level of development of physical education teachers' of complementary education in sports professional expertise and skills, requiring a quick adaptation and continuous updating knowledge (Mischenko et al., 2021). The teaching and learning of PE in schools expose a challenging task in the modern era (Ceciliani et al., 2021). Notwithstanding, the meticulous efforts of researchers and specialists to analyze the usefulness of varied instructional methods, coordinating educational purposes with pedagogical strategies remains a noticeable area of research (Cereda, 2023). In pedagogical domain, a model can be described as a method for arranging the interrelated components of curriculum and teaching-learning learning with the aim of accomplishing particular learning outputs (Hastie & Casey, 2014). A pedagogical model provides a general sequential priority plan and a logical approach to teaching and learning process (Casey & Kirk, 2020). Additionally, it is a technical language to teachers contributing to a consistent evaluation of the learning process (Garganta et al., 2015). Moreover, model-based learning has revealed its competence to enhance competence, motivation and autonomy (Manzano-Sánchez and Valero-Venezuela, 2018). The first-generation pedagogical models that contributing to organized teaching system included Direct Instruction Model SEM, Cooperative Learning, Peer Teaching, Inquiry Teaching (de Oliveira, 2016). Although, the direct instruction model using a teacher-centered is mostly considered by the abilities first orientation where students repeat isolated actions to acquire technical competence before employing these actions in game context. Conversely, the enlarged emphasis on student psychomotor outcomes verified in this approach has contributed to low levels of satisfaction and learning in PE by students (Gil-Arias et al., 2020; Pritchard et al., 2008). In a revolutionary pattern, second-generation pedagogical approaches have been emerging as Teaching Games for Understanding (TGfU), Tactical Games, Play Practice and Step Game Approach. These new teaching models focus the learning process based on the game and contributing to the development of the game intelligence and decision-making skills of the students (Gil-Arias et al., 2020).

The SEM and TGfU models are remarkable due the fact that providing a more useful and gainful learning context to the students (González-Villora et al., 2021). SEM was developed to provide real sports experiences in PE classes and is a model that magnifies the cooperative learning in heterogeneous groups and resolves conflicts through in dialogue (Garganta et al., 2015). The TGfU emphasizing the capacity of students to actively construct knowledge based on their learning experiences and priorities decision-making though tactical problems that may occur in the game (López et al., 2016; Stolz & Pill, 2014). Even SEM and TGfU having its own characteristics, both share common conceptions as student-centered contexts and positioned learning, providing a faultless conversion into a hybrid way, supporting teachers to improve the learning process (Cereda, 2023). According to Shen and Shao (2022), hybrid models seem to be beneficial for children and adolescents in several components, as motor, cognitive and social aspects. These pedagogical models are more holistic where PE teachers adopted a student-centered learning situation and integrate multiple learning domains (i.e., cognitive, social, affective, psychomotor) considering the students' needs (Gil-Arias et al., 2020; Pritchard et al., 2008; Shen & Shao, 2022; Silva et al., 2023).

Over the last twenty years, a remarkable interest has been upwelling regarding pedagogical contexts in the domain of physical education (Casey & Kirk, 2020). Various researches have been conducted to assess the efficacy of different pedagogical models. However, most of them have principally focused on the application of individual models, being important to explore the hybrid approach (Gonzalez-Villora et al., 2019). For example, most notorious is the scarcity of research on the effects of hybrid teaching models based on the SEM and TGfU principles. (Gil-Arias et al., 2021). Also, recent studies have reported significant improvements in the student' motivation, engagement and development of the decision-making skills resulting from the implementation of hybrid teaching models, during the teaching of team sport (Gil-Arias et al., 2021; Gouveia et al., 2021). Hybridization of pedagogical models is a relatively recent approach and further research needs to be developed to completely investigate its details and influence on student learning consequences. Moreover, more research is needed to provide novel evidence and empowering PE, improving its value and importance. Therefore, the present study aimed to analyze the effects of a hybrid teaching model, based on both SEM and TGfU, on the performance and motivation of the students during basketball lessons. Based on important literature (Gil-Arias et al., 2020), it is hypothesized that the hybrid teaching model might produce benefits in the learning process, particularly in motivation and performance.

## **Methods**

### *Participants*

Participants of the study consisted of eighteen high school students (9 girls and 8 boys), aged between 15 and 17 years (mean  $\pm$  SD: 15.67  $\pm$  0.69 years). The criteria of inclusion from the study were participants: i) had to perform the initial (i.e., pre-test) and final (i.e., post-test) evaluations sessions; ii) participants perform the basketball classes; iii) regularly attend PE classes; iv) had evidence of any medical or orthopedic problem and a self-reported issue that would endanger their health. Prior to the start of the study, all participants and their parents/guardians were informed

about the study purpose and procedures. The written informed consent was obtained and signed by parents/guardians of all the participants. All procedures were carried out in accordance with the guidelines of the Declaration of Helsinki for investigations in humans and the study was approved by the ethics committee of the Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD).

#### *Procedure*

This study was conducted in a high school class during the second academic term (February). The assessment instruments were administered at two periods, separated by a 3-week interval. The first session (pre-test) was used to measure motivation and GP, while the last session (post-test) re-administered the assessment instruments. During the assessment process, participants were verbally encouraged to give their maximum effort while performing the exercises. The participants attended two classes per week (Tuesday and Thursday). The classes lasted for 90 minutes (approximately) and included an initial part of 10 to 15 minutes (class reception, and technical and tactical skills training), a main part of 65 minutes (game situations and competition), and a final part of 8 minutes (relaxation and award presentation). It is worth mentioning that the participants were informed about the tasks they had to perform during the classes, namely: checking the schedule, verifying team compositions, acting as referees, consulting the regulations, and filling out the game form (recording the results). For the implementation of the hybrid teaching model, a set of principles/attributes from the TGfU and the SEM were considered. SEM is an approach to teaching and learning in sports and games that focuses on developing participants' understanding of the game, emphasizing strategies, tactics, and fundamental principles rather than solely technical skills. Regarding the SEM model, the simulation of a sports season was promoted, creating a schedule with scheduled games, allocating coaches to each team, and defining referees for each match, thereby assigning roles to different students. The participants were organized into teams that chose a name for their team and chose a team leader. The formal competition initiated with games between the various teams, and the matches were properly officiated with the results recorded on the game form, emphasizing the competitive aspect. Lastly, a festive event was developed to finish the competition, where the champion team was crowned, awards were given to the different teams, and recognition was given to the best coach and referee of the competition. Regarding the principles considered from TGfU learning situations based on the game were applied, considering the individual needs of the students (players' experiences). Game situations were manipulated and conditioned at both functional and structural levels, such as reducing the playing area and playing with fewer players. Active learning in PE involves encouraging students to engage in participatory and hands-on activities aimed at motivating critical thinking through oral questioning about their decision-making in specific game situations, fostering a dynamic and interactive learning environment while enhancing understanding and retention of concepts. Technical skills were practiced during an initial part before the games, with the goal of refining and enhancing their effectiveness.

#### *Instruments*

The students' motivation was assessed using the validated questionnaire: Attitude Questionnaire of Students towards PE (Pereira et al., 2009). Before the pre-test, a questionnaire was given to each student to complete. The questionnaire consisted of 10 statements, with 7 statements related to "liking PE and its subjects" and 3 statements related to the "importance of PE." Additionally, 7 statements were formulated in a positive manner, while the remaining 3 were formulated in a negative manner. The students answered to the statements using a Likert scale, where responses were classified from 1 to 5, with 1 corresponding to "Strongly Disagree" and 5 corresponding to "Strongly Agree." The students were instructed to read the statements carefully.

The performance was measured using the Game Performance Assessment Instrument (GPAI) (Oslin et al., 1998), which was adapted for basketball according to Memmert and Harvey (Memmert & Harvey, 2008) recommendations. The GPAI provide the analysis of various components related to performance in basketball, specifically overall GP, game involvement (GI) support (SI), adjustment (AI), decision-making (DMI), skill execution (SEI), guarding or marking (GM), and cover (C) (Memmert & Harvey, 2008). For this study, a methodological adaptation of GPAI was applied, consisting of three components, decision-making (DMI), support action (AI), and guarding or marking (GM). AAFEF - Attitude Questionnaire of Students towards PE (Howard, 2011) the teams were formed, the students participated in 3 vs. 3 game situations on a reduced field, and each student's actions (appropriate and inappropriate) were recorded on a grid for a 5-minute period.

The value of the indexes and GP were calculated using the formulas presented in Table 1 (Memmert & Harvey, 2008).

Table 1. Components and formulas of GPAI. Adapted from Memmert and Harvey (2008).

<b>Game components</b>	<b>Description</b>	<b>Formulas</b>
<b>ITD</b>	Decision-making Index: Makes appropriate decisions about what to do with the ball (or projectile) during a game.	$ITD = A / (A + IA)$
<b>IAA</b>	Support Actions Index Provides: Appropriate support for a team with the ball (or projectile) by being in a position to receive a pass.	$IAA = A / (A + IA)$
<b>IGM</b>	Appropriate guarding/marketing of an opponent who may or may not have the ball (or projectile).	$IGM = A / (A + IA)$
<b>GP</b>	Game Performance.	$GP = (ITD + IAA + IGM)$

A = appropriate actions; IA = inappropriate actions; IAA - Support Actions Index; IGM - Marking Actions Index; ITD - Decision-making Index; GPEF - Liking for physical education; GP - Game Performance

*Statistical analysis*

Standard statistical methods were used to calculate the means and standard deviations. Normality was assessed using the Shapiro-Wilk test (for samples with  $n < 30$ ). A paired-samples t-test was used to detect differences between two distinct moments (pre- and post-test). The Wilcoxon test was applied if the data did not meet the normality assumption to compare differences between the two occasions. Effect size represented by Cohen's  $d$  was calculated and interpreted based on the values presented by Hopkins et al. (2009), namely: 0.2 (trivial), 0.6 (small), 1.2 (large), and  $> 2.0$  (very large). The percentage of change was calculated using the formula:  $(\%) = ([\text{Post-test} - \text{Pre-test}] / \text{Pre-test}) \times 100$ , with a 95% confidence interval (Vianna et al., 2020). Data were analyzed using SPSS software version 28.0 and the statistical significance was set at  $p \leq 0.05$ .

**Results**

The GPAI results and the results of the Attitude Questionnaire of Students towards physical education (AAFEEF) are presented in Table 2. Regarding the decision-making index, the results indicate significant differences between the pre-test and post-test, with a large effect ( $p \leq 0.05$ ;  $d = 0.89$ ). Concerning the support action index, the results reported differences between pre-test and post-test, with a large effect ( $p \leq 0.05$ ;  $d = 1.07$ ). For the guarding/marking index, the results indicated differences between the pre- and post-test, with a small effect ( $p \leq 0.05$ ;  $d = 0.48$ ). As for the GP, the results revealed differences between pre- and post-test, with a large effect ( $p \leq 0.05$ ;  $d = 1.06$ ). Regarding the liking for physical education (GPEF), the results showed no changes in the comparison between the pre- and post-test, although there is a trivial effect ( $p \geq 0.05$ ;  $d = 0.00$ ). Concerning to the importance of PE (IEF), no differences were reported when pre-test and post-test were compared, and a trivial effect was reported ( $p \geq 0.05$ ;  $d = 0.16$ ). As for the attitudes of the students towards PE, the results showed no differences between the pre- and post-test, showing a trivial effect ( $p \geq 0.05$ ;  $d = 0.11$ ).

Table 2. Changes in Variables from pre- to post-test.

Variabl			Cohen's d			
	Pre-test (M±SD)	Post-test (M±SD)	$\Delta$	$p$	$d$	
ITD	1.23 ± 0.54 *	1.92 ± 0.95 **	56.1	0.002 ##	0.89	Large
IAA	1.43 ± 0.96 *	2.82 ± 1.57	97.2	0.002 ##	1.07	Large
IGM	1.30 ± 0.91 **	1.77 ± 1.06	36.2	0.037 #	0.48	Small
PJ	1.32 ± 0.63	2.17 ± 0.94	64.4	<0.001 ###	1.06	Large
GPEF	4.02 ± 0.59	4.02 ± 0.64	0.00	0.443	0.00	Trivial
IEF	4.02 ± 0.68	4.13 ± 0.72 *	2.7	0.223	0.16	Trivial
AAFEEF	4.02 ± 0.54 *	4.08 ± 0.58 **	1.49	0.294	0.11	Trivial

ITD - Decision-making Index; IAA - Support Actions Index; IGM - Marking Actions Index; GP - Game Performance Index; GPEF - Liking for physical education; IEF - Importance of physical education; AAFEEF - Attitude Questionnaire of Students towards Physical Education; Normality - Significant differences: \* $p < 0.05$ ; \*\* $p < 0.1$ ; \*\*\* $p < 0.001$ ; Significant differences from pre-test to post-test - # $p < 0.05$ ; ## $p < 0.01$ ; ### $p < 0.001$ .

**Discussion**

The present study aimed to analyze the effects of a hybrid teaching model, based on both TGfU and SEM, on the performance and motivation of the students during basketball lessons. To the GP variable, differences were observed in the indexes ITD, IAA and PJ from pre- to post-test. Although there were no differences in students' motivation from pre- to post-test, the results revealed that the students liked and valued PE, reflecting a positive attitude towards the subject. Regarding GP, the study revealed improvements in pre- to post-test in both performance and indexes. This evidence seems to suggest benefits to the students' GP when using the hybrid teaching model, based on SEM and TGfU. This finding was supported by the study of Ferraz et al. (2023), that stated that students increased engagement and development of GP by employing game-based models. Similarly, Moura et al. (2018) reported positive impacts of active student participation in the teaching and learning process, leading to improvements in the motor, cognitive and social domains and, consequently, in the in-GP index.

Furthermore, according to Gouveia et al. (2021), classes based on the principles of SEM and TGfU during the teaching of team sports can lead to a more motivating pedagogical process, resulting in improved GP with emphasis on decision-making skills. The improvement in GP and related indexes in this investigation may be related to the applied teaching models, as SEM which enhances GP over time due to its characteristics that benefit students' performance. Additionally, the SEM model allows for cooperative learning in small and heterogeneous groups, enabling greater participation in the game by all students (Garganta et al., 2015). Furthermore, the specific features of TGfU related to the learning context provide a deeper understanding of the game (O'Connor et al., 2022). During conditioned games, tactical problems are presented and requires students to make decisions (Ferraz et al., 2023). This approach allows students to have a better understanding of the game and improve their skills (Pizarro et al., 2017). Nkala and Shehu (2016) also demonstrated positive influence on students' GP when TGfU in basketball classes was

used. Some authors defend that these models centered the student as an autonomous and responsible agent in the teaching-learning process (Choi et al., 2022; Tan et al., 2012) and reinforce their learning through reasoning, reflection, critical thinking and promote their problem-solving abilities during stimulating games (López et al., 2016; Silva et al., 2023).

There are limited investigations demonstrating the benefits of applying a hybrid teaching model based on the principles of SEM and TGfU in basketball regarding GP. However, several studies indicated that the application of a hybrid teaching model in other team sports, such as volleyball and soccer, seems to provide benefits to the students. These benefits include significant improvements in GP, with potential enhancements in decision-making skills (Araújo et al., 2016; López-Lemus et al., 2023; Mesquita et al., 2012; Ribeiro et al., 2023).

The present study found no differences in motivation variable from pre- to post-test when considering GPEF (Liking for PE). However, a high average score was observed, indicating that students demonstrated agreement and positive feelings towards the PE classes. These findings are consistent with previous studies (Osório, 2013; Pica, 2017) reporting similar results. Despite the students expressing a strong liking for PE at both moments, no differences obtained could be attributed to the unique characteristics of the discipline. In PE, students can experience a class that differs from others, engage in social interactions, and enjoy the freedom of movement (Pica, 2017). According to Gómez-Mármol et al. (2015), the notion of enjoyment in PE refers to the level of satisfaction that students derive from their lessons during regular school hours. Furthermore, it is imperative for educators to meticulously plan lessons that are both stimulating and innovative, considering the unique interests and expectations of individual students (Vicente-Rodríguez et al., 2011). This approach is crucial in development their optimal growth and cultivating a genuine fondness for the PE. Otherwise, as highlighted by Ferraz et al. (2024), may result in negative experiences during PE classes, ultimately leading to a decline in students' engagement in physical activities during their adult life. PE typically fosters high enjoyment levels among students due to its engaging content and diverse teaching methodologies, although enjoyment may fluctuate based on individual characteristics. However, an important consideration from the perspective of the hybrid teaching model is the integration of various methodologies in PE, such as traditional approaches and TGfU. By combining these methods, educators can cater to different learning preferences and potentially mitigate negative experiences during PE classes. This integration could enhance students' engagement and enjoyment, thereby promoting lifelong participation in physical activities (Gomez Marmol et al., 2015).

Similarly, there were no differences regarding IEF (Importance of PE). However, it is evident that there is a clear tendency among students to attribute importance to PE. This suggests that students consider PE as crucial for their education and view it as equally important as other disciplines (Pica, 2017). Furthermore, the high importance given to PE by most students in this study contrasts with the findings of Oneto (2013), where a significant portion of students expressed unfavorable opinions or indecision regarding the discipline's importance. The reason for this disparity may be attributed to the varying weight of certain disciplines, such as Portuguese and Mathematics, throughout their schooling, as well as the students' perspectives on future employment opportunities (Brandão, 2002). Despite PE ranking highest in enjoyment, it typically falls to sixth or seventh place in perceived importance, with Mathematics and Portuguese often taking precedence. This reflects a broader trend favoring heuristic and scientific subjects over humanities. Students view PE as both obligatory and enjoyable, showcasing the contrast between work and leisure. Despite its mandatory nature, it brings personal satisfaction, blurring the lines between fun and obligation for many students (Betti & Liz, 2003).

Research suggests that theoretical knowledge in Science, Technology, English, and Mathematics (STEM) subjects is often perceived as more valuable due to its capacity to shape perspectives, foster balanced logical thinking, and cultivate independence (Brown et al., 2011; Griggs, 2007). As a result, this belief forms the basis for an educational curriculum that prioritizes intellectual frameworks, emphasizing around seven or eight academic disciplines. PE, not being centered on the acquisition and mastery of theoretical knowledge, is sometimes perceived as non-academic and therefore non-educational by some critics (McNamee, 2005; Reid, 1996). Additionally, negative experiences related to the practice of PE, possibly due to inadequate planning and intervention, could have influenced students' attitudes in the previous studies. Various factors can impact students' perception and block the realization of the benefits of PE, including gender, age, race, and sociocultural background, among others (Butt et al., 2011). The involvement and perception of girls in PE may be influenced by the content of the lessons (Griggs & Fleet, 2021), the type of sport (Butt et al., 2011; Farias et al., 2017), and their social and family context (Metcalf, 2018). Additionally, PE teachers often create environments and classes that lean towards masculinity, potentially contributing to gender disparities (Curtner-Smith et al., 2021). To mitigate these effects, teachers should design classes based on integrated technical-tactical work, making it the central focus of instruction, while prioritizing the students and the learning process (Haerens et al., 2011; Woodson-Smith et al., 2015). Casey and Kirk (2020) highlight the SEM (Siedentop et al., 2019) and the Game-Centered Approach (Oslin & Mitchell, 2006) as exemplary approaches for promoting equitable and inclusive sports education (Farias et al., 2017; Slade et al., 2019).

Regarding students' attitudes towards the discipline (GPEF and IEF), it is worth noting that the reason for the lack of significant differences may be explained by the fact that students already had a positive perception of PE before the implementation of the hybrid model. This positivity might be attributed to the playful component present in PE, which is not as frequently observed in other disciplines (Oneto, 2013). In this sense, the study by MacPhail et al.

(2008) also found that the implementation of TGfU model provided benefits to students, as it fostered feelings of enjoyment and pleasure. Likewise, Pill (2008) observed increased levels of student motivation when implementing the TGfU model. These findings suggest that the positive attitudes of students towards PE, even before the introduction of the hybrid model, might have contributed to the lack of significant changes in their attitudes after the intervention. The inherent enjoyment and positive experiences in PE might have already encouraged a favorable disposition towards the discipline among the students, reinforcing the importance of creating engaging and enjoyable learning experiences in the context of PE.

Although the present study did not find differences in students' motivation due to their pre-existing positive attitude towards the discipline, it is evident that the implementation of a hybrid model based on the TGfU and the SEM demonstrates a clear tendency to at least maintain high levels of motivation for PE (Gil-Arias et al., 2017). The current study presented some limitations, notably the small sample size and the sole use of direct observation as the research method. May be incorporating video analysis could enhance observational power. Future research in PE should continue to focus on the application of hybrid teaching models, investigating the benefits of their implementation in various teaching disciplines, and considering instructional units with more class sessions.

### Conclusion

The pedagogical model and hybridization based on SEM and TGfU principles demonstrated effectiveness in the GP over the instructional unit of basketball. Although the use of the aforementioned hybrid model did not change the students' initial motivation the results revealed that the students liked and valued PE, reflecting a positive attitude towards the subject. Thus, to improve GP, it seems that applying a hybrid teaching model with principles based on SEM and TGfU is an appropriate approach to enhance students' game skills (both technical and tactical). In this sense, attributes and principles such as simulating a sports season and student-centered learning situations, which consider individual needs seems to be important to develop students' awareness of attributing meaning to their actions, resulting in improved GP. Hybridizations of distinct pedagogical models have shown potential in improving the usefulness of physical education.

Nevertheless, the challenges in the implementation, the time of the interventions and requirement to develop with the support of researchers and teachers are relevant factors to consider. Thus, continued research and collaboration between researchers and teachers are essential to guarantee the fruitful application of pedagogical models in physical education classes and the success of their potential in supporting student integral development and learning. Furthermore, more research in PE is needed to focus on the implementation of hybrid teaching models, to better understand their effects on different teaching disciplines, and also seems to be relevant to consider other instructional units with more physical education classes. At the moment, our findings could be helpful to teachers, coaches and researchers contributing to the development of teaching strategies to empower the PE classes.

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