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Effect of Basket Height Adaptation on Technical–Tactical Skills, Self-Efficacy, Cooperation, and Students' Perception in a Basketball Unit

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Abstract: The adaptation of sports equipment seeks to adjust the learning environment to students' characteristics. The purpose of this study was to assess the effect of adapting the basket height on the execution and decision-making of technical–tactical skills, self-efficacy, cooperation, and students' perception in a basketball unit. A quasi-experimental design with a control group, pre-test, and post-test was carried out in an eight-session basketball unit. The control group completed the tasks with a basket height of 3.05 m, and the experimental group completed the tasks with a basket height of 2.80 m. The execution and decision-making involved in passing, shooting, and one-on-one situations, students' self-efficacy, and cooperation were assessed before and after the basketball unit. Students' perception was assessed throughout the basketball unit. The use of an adapted basket height promoted better execution, more occurrence, and more efficacy for shooting, as well as an increase in the specific individual self-efficacy. The use of the standard basket height involved different technical and tactical solutions by the students as well as an increase in the occurrence and efficacy in one-on-one situations. The students in the control group did not increase their specific individual self-efficacy. The scaled equipment resulted in more variability in the solutions performed by the students (balance between shooting and one-on-one actions).

Keywords: children; physical education; rules; adaptation; self-efficacy; cooperation

1. Introduction

The goal of physical education is for students to develop their physical literacy. To achieve this, the activities must be appropriate for the students. This allows them to develop their psychomotor skills, their confidence, and their physical competence. Playing sports does not involve the development of skills, confidence, and competence in the students per se. The activities must be adapted to the characteristics and needs of the students. Adapting desks and chairs to the students' characteristics is normal in schools. However, this type of adaptation does not always occur with sports material, such as the basket height [1]. In the 1950s, rules and equipment for several sports were adapted to children, creating mini-sports [2–4]. In basketball, these adaptations resulted in children under 12 playing with a basket at a height of 2.60 m. After that age, children played with a basket at a height of 3.05 m, as adults do. Most school gyms have a basket at the adults' height. Previous studies have

analyzed the impact of adaptations of basket height among young basketball players. The effects of this manipulation in physical education and different aspects of the students' physical literacy, such as execution, physical competence, or motivation, are not clear.

Equipment adaptations in basketball affect how students learn as well as their experiences in playing basketball. Adaptation of the ball size involves higher dribbling and shooting efficacy [5–8], better execution of shooting mechanics [9–14], and an increase in players' satisfaction, self-efficacy, and self-esteem [1,15,16]. Adaptation of the basket height improves shooting mechanics and shooting success [13,15,17–19], and it increases players' self-efficacy and motivation [1,15,20,21]. Equipment scaling could allow students to have more ball control and to shoot from a large range of distances. This could, for example, create conditions in which the players can take more shots and have more situations of one on one. However, most of these studies have been done with young players in training and competition. There is some evidence that analyzes the implications of these adaptations for physical education students. These populations are different in many aspects, such as in their motivation to play basketball, their previous experiences, their accumulated practice, and their basketball skills.

Quality experiences in physical education are critical for students' physical literacy and for creating positive behaviors within movement, sport, and exercise. An adaptation of the basket height could affect the learning and experience of physical education students during basketball units. Previous studies recommended that these adaptations should be progressive from mini-basketball to basketball [22–25]. In the sport context, coaches and experts have expressed their concerns for the age group after mini-basketball (under 12) because children of that age are not fully developed to play with the adults' rules [21]. These coaches and experts have indicated the need to adapt several rules and the equipment. These concerns may also apply to children who play basketball in physical education. Previous studies have focused on ball size adaptations because this adaptation is more affordable for economic and practical reasons. However, it is also feasible to acquire affordable and safe school baskets that easily allow height manipulation. Knowing the incidence of this type of equipment modification could provide information for physical education teachers and school principals to determine whether to explore their use and acquisition. The purpose of this study was to assess the effect of adapting the basket height on the execution and decision-making involved in technical–tactical skills, self-efficacy, cooperation, and students' perception in a basketball unit.

2. Materials and Methods

2.1. Design and Participants

A quasi-experimental design with a control group, pre-test, and post-test was carried out in an eight-session basketball unit in physical education [26]. The study was done in a natural context. The school's organization, schedule, and structure was followed in the realization of the study. The independent variable was the basket height. The control group completed the tasks with a basket at a height of 3.05 m, and the experimental group completed the tasks with a basket at a height of 2.80 m. The dependent variables were the execution and decision-making involved in technical–tactical skills, self-efficacy, cooperation, and students' perception. The execution and decision-making involved in passing, shooting, and one-on-one situations, student's self-efficacy, and cooperation were assessed before and after the basketball unit. The students' perception was assessed throughout the basketball unit.

Participants were from four classrooms of the second year of a secondary school (13–14 years old). The sample participated in an eight-session basketball unit in physical education. The experimental group included 29 students (13.4 ± 0.8 years old, 55% female and 45% male), and the control group included 27 students (13.6 ± 0.7 years old, 55% female and 45% male). The students had two physical education sessions per week. All classes were performed in an indoor gym. Students filled out an "Extracurricular physical activity questionnaire" to assess the students' previous experience regarding

basketball outside of physical education. The groups' composition was established using a random stratification by the physical education teachers using the information about the students' previous basketball experiences and their basketball skills (pre-test). Each class was divided in two. Half of the students of each class were in the control group (i.e., participated in a basketball unit with the basket at the standard height). The other half of the students were in the experimental group (i.e., participated in a basketball unit with the basket at the experimental height). Only students who participated in more than eighty percent of the classes and completed the pre- and post-tests were included in the study. No students that trained and played in competitive basketball teams or had previous experience in competitive basketball were included in the study. The classes were taught by two licensed teachers of physical activity and sport science (with an average of 3.45 ± 0.91 years of experience). Both teachers took part in an orientation process of three meetings. The orientation involved explanation, revision, and standardization of the theoretical and practical aspects and the tasks and tests used. Each teacher taught two classes. The teachers taught the experimental and control groups at the same time during the class (natural group). The students and the parents/guardians of the students were informed of the study, and they provided their informed consent in writing. The University Ethics Committee of the principal author approved the study (ID 2260/2019).

2.2. Variables

The independent variable was the basket height. There were two basket heights: official rules (3.05 m for the control group) and modified rules (2.80 m for the experimental group). The dependent variables were:

(a) Technical–tactical execution of the pass, the shot, and one-on-one situations (efficacy, technique, decision-making, and participation). Shooting technique was assessed with a standing shot. The efficacy, participation, and decision-making variables in the pass, shot, and one-on-one situations were assessed in a three-on-three situation. The selection of the variables was done following the experts' recommendations for the teaching–learning process for basketball developmental stages [27–30]. Table 1 describes the criteria for the different categories of the various technical–tactical variables analyzed.

(b) Self-efficacy: Student perception of self-efficacy was divided into the perception of general physical efficacy, specific individual self-efficacy, and specific collective self-efficacy. Student perception of general physical self-efficacy was assessed using the "Physical self-efficacy scale" (10 items) [33]. Specific individual self-efficacy (16 items) and collective self-efficacy (16 items) were assessed using an adaptation of the "Basketball-specific self-efficacy questionnaire" to the physical education setting [34] according to the criteria provided by Bandura [35]. The internal consistency reliability of the scale was calculated for each questionnaire: the "Physical self-efficacy scale" (Cronbach's $\alpha = 0.844$) and "Basketball-specific self-efficacy questionnaire" (Cronbach's $\alpha = 0.869$ for individual and for 0.939 collective) [35,36]. A scale of 0–100 was used for each type of self-efficacy.

(c) Cooperation: This variable was assessed through an adaptation of the "Sports Cooperation questionnaire" [37] to physical education. The questionnaire had 14 items related to conditional cooperation, situational cooperation with the teacher, disposition to unconditional cooperation, situational cooperation with classmates, and situational cooperation outside the tasks. The internal consistency reliability of the scale was calculated (Cronbach's $\alpha = 0.795$). The five factors explained 65% of the variance. A scale of 0–100 was used to assess cooperation.

(d) Students' perception of enjoyment, satisfaction, and achievement: The perception of the students experience was assessed after each session. Students were asked whether they had enjoyed the class, whether they were satisfied with their participation in class, whether they thought they had improved, and if they thought that they had achieved the goals established by the teacher. A Likert scale of 0–10 was used for each question.

Table 1. Criteria for establishing the efficacy, technique, decision-making, and participation in the passes, shot, and one-on-one variables.

Variable	Description
Shot technique	This was sub-divided into dichotomous categories (yes/no) related to the force applied to the ball (arm extended in the direction of the basket, extension of the arm at the moment of the shot, and sequential and continuous extension of the joints that participated in the shot) and related to the ball direction (forearm was vertical and was in front of the shoulder executing the shot, the foot of the arm executing the shot was ahead, and the auxiliary arm was only contacting the ball). Criteria adapted from Cardenas [31].
Pass efficacy	Whether the teammate received the pass.
Pass decision-making	Adequate (player used the far hand and pivoted to maintain the body position, thereby generating uncertainty for the opponent) or inadequate (player did not pass with the far hand or did not pivot). Criteria adapted from Alarcon et al. [32].
Pass participation	Number of passes done by the players.
Shot efficacy	Whether the basket was made.
Shot decision-making	Adequate (player shot with or without opposition near the basket (in the restricted area) or shot without opposition from intermediate zones) or inadequate (player shot with opposition from intermediate zones (opposition was defined as having the opponent within an arm's length or less) or player did not shoot when the opponent was more than two arm's length away). Criteria adapted from Alarcon et al. [32].
Shot participation	Number of shots taken by the players.
One-on-one efficacy	If the player overtook the direct opponent (only if the opponent was in the imaginary line between the basket and the ball).
One-on-one decision-making	Inadequate (player dribbled when the position of the direct opponent was more than one arm's length of distance or player did not dribble when the direct opponent was less than one arm's length) or adequate (when player did not violate these criteria). Criteria adapted from Alarcon et al. [32].
One-on-one participation	Number of one-on-one situations created by the players.

2.3. Procedure

The basketball unit was the same for all students (material, organization, task, etc.). The only difference between the control and experimental groups was the basket height with which they performed the tasks. Each class was divided randomly into two sub-groups. The control group completed the tasks with two baskets at a height of 3.05 m. The experimental group completed the tasks with two baskets at a height of 2.80 m. The experimental basket height was the intermediate height between mini-basketball (2.60 m) and basketball (3.05 m), as experts and coaches have recommended [38]. The baskets used for the study were a prototype designed by the researchers and CADE L.L.C. based on the functionality, standardization, and safety. The number of students per basket during the tasks was between 6–7 students (on average). The basketball unit used was designed by Ureña et al. [39] and followed a comprehensive model of physical education or Teaching Games for Understanding [40].

Before and after the eight-session basketball unit, students took a standing shot and played three-on-three for five minutes. Both tests were done with the basket at the standard height (3.05 m). For the standing shot without opposition, students were distanced 3 m from the basket (straight ahead). They had two trials of practice shots, followed by the shot execution analyzed in the study. The standing shot followed the criteria established by Hopla [41]. Two cameras (frontal and lateral)

were used to record the execution. In the three-on-three situation, the offensive actions of the players were analyzed. The dependent variables were registered by trained observer who held a Master's degree in Sports Science with at least five years of experience in match analysis. The training process involved explanation of and practice in data collection and coding. The reliability of the observer was measured before and after the observation. A researcher was used as reference to establish the inter-observer reliability. The lowest level of inter-observer reliability was 0.80, and the lowest level of intra-observer reliability was 0.93 (Kappa index). After the standing shot and three-on-three situation (pre-test and post-test), students filled in the self-efficacy and cooperation questionnaires. After each session of the unit, students completed the "Students' perception of enjoyment, satisfaction, and achievement questionnaire." Before data analysis, an exploratory analysis was carried out to detect anomalies in data notation using summary statistics to ensure data quality [42].

2.4. Data Analysis

Technical–tactical variables were expressed in occurrence and percentages. Self-efficacy and cooperation variables are presented in the results section on a scale of 0 to 100. Data on the students' perception of enjoyment, satisfaction, and achievement were expressed on a scale of 0 to 10, where 0 was the lowest value and 10 the highest value. An analysis of variance with repeated measurements was used to evaluate the possible differences for the continuous variables between each experimental condition analyzed. Mauchley's sphericity was used to evaluate the differences between groups, from which it was decided to use Pillai's trace, or the assumed sphericity. A Bonferroni post hoc procedure was also carried out. A Chi-square test was used to evaluate the possible differences for the categorical variables between each experimental condition analyzed [42] (Table 2). All data were treated with a significance level of $p < 0.05$. To measure the effect size, the eta square (η2) (analysis of variance) and odds ratio (Chi-square test) were calculated. The eta square reference values used were the following [43]: no effect (η2 < 0.04), minimal effect (0.04 ≤ η2 < 0.25), moderate effect (0.25 ≤ η2 < 0.64), and strong effect (η2 ≥ 0.64). To compute the odds ratios, the guideline provided by Field [42] was used. The IBM SPSS statistics 24.0 statistical package (IBM Corp., Armonk, NY, United States) was used for statistical analysis.

Table 2. Successful occurrence and percentage of successful occurrence of the technical–tactical variables for the passing, shooting, and one-on-one situations.

	Control Group			Experimental Group		
	Pre-Test	**Post-Test**	*p*	**Pre-Test**	**Post-Test**	*p*
Passing efficacy	147 (82.1%)	96 (74.4%)	0.068	161 (76.7%)	150 (81.5%)	0.146
Passing decision-making	12 (6.7%)	10 (7.8%)	0.445	6 (2.8%)	12 (6.5%)	0.066
Passing participation	179 (62.8%)	129 (54.7%)	0.037	210 (67.7%)	184 (58.2%)	0.014
Shot efficacy	22 (21.6%)	22 (22.7%)	0.492	14 (15.4%)	30 (25%)	0.062
Shot technique						
Arm extension	6 (17.1%)	6 (17.1%)	0.149	3 (8.6%)	5 (14.3%)	0.143
Moment arm extension	1 (2.9%)	2 (5.7%)	0.070	2 (5.7%)	1 (2.9%)	0.442
Continuous movement	1 (2.9%)	3 (8.6%)	0.061	6 (17.1%)	3 (8.6%)	0.441
Vertical forearm	2 (5.7%)	7 (20%)	0.115	2 (5.7%)	7 (20%)	0.049
Foot ahead	7 (20%)	12 (34.3%)	0.472	8 (22.9%)	8 (22.9%)	0.330
Auxiliary arm	3 (8.6%)	11 (31.4%)	0.039	3 (8.6%)	9 (25.7%)	0.047
Shot decision-making	87 (85.3%)	82 (84.5%)	0.519	67 (73.6%)	105 (87.5%)	0.009
Shot participation	102 (35.8%)	97 (41.1%)	0.125	90 (29.4%)	120 (38%)	0.023
One-on-one efficacy	25 (20%)	44 (31.4%)	0.024	35 (21.1%)	29 (20%)	0.463
One-on-one decision-making	33 (21.9%)	58 (36.9%)	0.003	59 (28.1%)	60 (35.5%)	0.076
One-on-one participation	125 (43.9%)	140 (59.3%)	0.001	166 (53.5%)	145 (45.9%)	0.033

Legend: *p*-value differences between the pre-test and post-test (Chi-square test).

3. Results

Regarding the technical–tactical variables (Table 2), a statistically significant decrease in pass participation was observed for both the control group ($p = 0.037$) and the experimental group ($\chi2(1, 626) = 6.073$, $p < 0.014$). Maintaining a vertical forearm during the shot significantly increased in the experimental group ($\chi2(1, 29) = 4.137$, $p = 0.042$). Proper use of the auxiliary arm significantly increased in both the control group ($\chi2(1, 27) = 4.375$, $p = 0.039$) and the experimental group ($\chi2(1, 29) = 4.062$, $p = 0.047$). Decision-making regarding shooting ($\chi2(1, 211) = 6.611$, $p = 0.009$) and shot participation ($\chi2(1, 636) = 5.203$, $p = 0.023$) significantly increased in the experimental group. The one-on-one variables analyzed increased significantly among the control group (e.g., one-on-one efficacy, $\chi2(1, 265) = 4.079$, $p = 0.034$) but did not change in the experimental group (e.g., one-on-one efficacy, $\chi2(1, 311) = 0.056$, $p = 0.813$). The odds ratio indicated that the odds of the control group improving its success or adequacy in the following categories were: $1/0.92 = 1.08$ times less probable for pass participation; 4.88 times more probable for the use of the auxiliary arm; 1.83 times more likely to have one-on-one efficacy; 2.21 times more to improve in one-on-one decision-making; and two times more likely to improve one-on-one participation. Likewise, the chances that the experimental group improved its success or adequacy in the following categories were: $1/0.66 = 1.5$ times less likely to improve pass participation; 5.6 times more probable for the use of the vertical forearm; 4.7 times more probable for the use of the auxiliary arm; 2.5 times more likely to improve shot decision-making; 1.5 times more probable to increase shot participation; and $1/0.73 = 1.3$ times less likely to increase "one-on-one participation".

Related to the psychological variables (Table 3), statistically significant differences were found between the pre-test and post-test ($F(1, 55) = 39.309$, $p < 0.001$, $\eta2 = 0.079$) on players' physical self-efficacy. However, the interaction effect (pre-test–post-test*group) was not significant ($F(1, 55) = 0.288$, $p = 0.593$, $\eta2 = 0.079$). There was a significant effect between the pre-test and post-test ($F(1, 55) = 24.983$, $p < 0.001$, $\eta2 = 0.057$) and interaction between pre-test–post-test and group ($F(1, 55) = 6.155$, $p = 0.016$, $\eta2 = 0.014$) on players' specific self-efficacy. Moreover, the players' specific collective efficacy showed significant differences between the pre-test and post-test ($F(1, 55) = 24.983$, $p < 0.001$, $\eta2 = 0.057$), and no significant interaction was found between the two variables (pre-test–post-test*group) ($F(1, 55) = 2.202$, $p = 0.143$, $\eta2 = 0.009$). On the other hand, no significant effect was found between subjects for psychological variables (physical self-efficacy, $F(1, 55) = 8.301e-4$, $p = 0.977$, $\eta2 = 0.000$; specific self-efficacy, $F(1, 55) = 0.076$, $p = 0.783$, $\eta2 = 0.001$; specific collective self-efficacy, $F(1, 55) = 0.010$, $p = 0.922$, $\eta2 = 0.000$; and cooperation, $F(1, 55) = 0.015$, $p = 0.902$, $\eta2 = 0.000$) in Table 3. The post hoc test showed significant differences in the following comparisons: control group's physical self-efficacy, $t(55) = 4.660$, $p < 0.001$, $\eta2 = 0.63$; experimental group's physical self-efficacy, $t(55) = 4.196$, $p < 0.001$, $\eta2 = 0.62$; experimental group's specific self-efficacy, $t(56) = 5.362$, $p < 0.001$, $\eta2 = 0.70$; experimental group's collective efficacy, $t(55) = 4.706$, $p < 0.001$, $\eta2 = 0.86$; and control group's collective efficacy, $t(55) = 2.752$, $p = 0.042$, $\eta2 = 0.52$.

Table 3. Average, standard deviation, post hoc, and effect size of the values of self-efficacy, cooperation, motivation, and knowledge (values expressed on a scale of 0–100).

	Control Group				Experimental Group			
	Pre-Test	**Post-Test**	*p*	**Effect Size**	**Pre-Test**	**Post-Test**	*p*	**Effect Size**
Physical self-efficacy	57.55 ± 12.84	67.88 ± 16.44	0.001	0.63 (mod)	59.44 ± 10.71	69.08 ± 17.77	0.001	0.62 (mod)
Specific self-efficacy	59.64 ± 16.31	63.05 ± 14.46	0.123	0.21 (small)	58.33 ± 23.01	68.34 ± 11.46	0.001	0.70 (strg)
Collective efficacy	56.50 ± 16.73	65.13 ± 10.00	0.042	0.52 (mod)	58.25 ± 14.59	70.81 ± 10.00	0.001	0.86 (strg)
Cooperation	71.51 ± 10.39	70.89 ± 11.08	0.773	0.06 (small)	69.62 ± 11.28	72.84 ± 10.93	0.145	0.12 (small)

Legend: *p*-value differences between the pre-test and post-test (Bonferroni post hoc); effect size ($\eta2$); moderate effect (mod); strong effect (strg).

Regarding the students' perception of enjoyment, satisfaction, and achievement (Table 4), no significant differences were found between the control group and the experimental group ($p < 0.38$).

Table 4. Average, standard deviation, post hoc, and effect size of the values of students' perception of enjoyment, satisfaction, and achievement (values expressed on a scale of 0–10).

Variables	Control Group		Experimental Group			
	Av	**SD**	**Av**	**SD**	***p***	**Effect Size**
Have you enjoyed the class today?	7.58	2.01	8.00	2.39	0.48	−0.06
Are you satisfied with your performance in class today?	7.33	1.88	7.80	2.22	0.74	−0.03
Has the class helped you to improve your skills in playing basketball?	7.47	2.54	7.34	4.44	0.62	−0.04
Have you achieved the goals established by the teacher?	7.30	1.85	7.55	2.32	0.91	−0.01
Total	7.42	1.84	7.67	2.04	0.38	−0.07

Legend: *p*-value differences between the control group and experimental group (Bonferroni post hoc); Effect size (η2).

4. Discussion

The objective of this study was to analyze the effect of the manipulation of the basket height on students' technical–tactical skills, psychological variables, and perception of the learning process in a physical education basketball unit. Similar effects were found between students of the control and experimental groups in some of the studied variables. For both groups, participation in the basketball unit reduced the use of passes in three-on-three situations, and it increased the physical efficacy and specific collective efficacy. The use of an adapted basket height involved an improvement in the shooting skill and the specific individual self-efficacy. The students that practiced with a standard basket height increased the occurrence of one-on-one situations as well as their efficacy in these situations. No differences between groups were found in the students' perception of enjoyment, satisfaction, or achievement.

The adapted basket height involved a better execution of the shot for the students. The lower basket height allowed them to have their forearms vertical and directed toward the basket. Children tend to open the elbow of the execution arm. This common error tends to occur when children focus on the force application because they perceive that they cannot comfortably reach the basket. In both groups, the use of the auxiliary arm improved, which demonstrates improvements in their shooting patterns. The results show how the students from both groups moved from an execution with two hands to an execution with one hand. However, the experimental group had greater improvement in shooting execution and focused more on precision than on strength. This could be because they practiced with lower baskets. Previous studies also found that children shoot free throws in a more fluid motion when they shoot at lower basket heights than at standard basket heights [18]. Technical improvement is higher when the adaptation of the basket height and ball size is combined [10].

These changes in the execution by the experimental group students could be why they had a 10% improvement in their shot efficacy. This improvement in the execution and efficacy may be the reason for the increase in the shots taken by the experimental groups. The students felt more comfortable doing this action, so they executed more. The improvement in the experimental group's decision-making regarding shooting was likely related to these aspects. These findings enhance representative learning opportunities in real-game contexts, matching with principles of the pedagogical approach for optimal development [44,45]. In the post-test, the experimental group reduced their number of passes and one-on-one situations by around 8–9% and increased their shots by 9%. The experimental group had more variability in their finalization actions in the three-on-three situation with more balanced use of shots and one-on-one situations. These results demonstrate the importance of the design of educational contexts that induce variability in motor learning. These environments are a key aspect for students to explore different solutions that facilitate scoring and, thus, reinforce learning [46,47].

A different way to resolve game situations was found in the control group. The control group reduced their passes and increased the occurrence of one-on-one situations in the post-test (15%).

Increased participation in the one-on-one situations by the control group also involved an increase in the decision-making skills and the efficacy of the one-on-one situations (improvement of 11%). These results could be considered normal. Students improved in the aspects that they practice most, and they have more efficacy in them as well. The control group did not improve their shot efficacy between the pre-test and post-test. However, they increased the use of one-on-one situations as a solution to get closer to the basket to score (e.g., layup). This reduced the variability of their actions [47]. On the other hand, the control group improved in the use of the auxiliary arm when shooting, but not in the rest of the aspects of the shot execution. The shot is a difficult technique to master. The control group made one out of five shots. They did not perceive that they had improved, so they used other solutions to resolve the game situations. The results confirmed the findings of previous studies that showed that equipment adaptation allowed children to improve their shot technique and have more variability in their actions [5,11,32]. However, they also showed how students adapted their actions to the standard equipment with similar total efficacy, but with less variability.

Students from both groups found different solutions to the game situations, shots, and one-on-one situations. These improvements resulted in increased physical efficacy and specific collective efficacy after the school unit. Participation in the basketball unit increased students' perception of physical efficacy and specific collective efficacy among both groups. Students perceived that their experiences and learning helped them to improve their physical and specific collective skills to resolve the situations that they encountered. The experimental group improved the specific individual self-efficacy and their specific collective self-efficacy more than the control group. This could be related to their perception that they improved their execution of the shot and how they solved the task (greater repertoire of actions). Previous studies have shown that children consider the shot to be the most important skill of the game [6,7,48,49]. The shot is also the action that impacts the game the most [15,48]. The control group did not significantly improve their specific self-efficacy, although they improved their one-on-one efficacy by around 11%. These differences between groups could be related to the way that students from the control group perceived that this is more dependent on their physical capacities. Self-efficacy is a critical aspect of adherence to physical activity and sport [50].

The eight-session basketball unit did not involve significant changes in the perception of cooperation in the students of either group, although students perceived that their specific collective self-efficacy increased. The reason for these findings could be factors such as that the duration of the unit was not enough to achieve changes at this level, the fact that students changed classmates in the exercises and sessions, or that the initial level of cooperation of both groups was high (~70 out of 100). No differences were found in the students' perception of enjoyment, satisfaction, or achievement between the students of the control group and the experimental group. In both groups, the students perceived that they enjoyed the classes, they were satisfied with their performance and skill improvements, and they had achieved the goals established by the teachers.

The findings from this study and previous studies show how an adaptation of the basket height improves the shot mechanics and success [10,13,15,17,19] and increases specific individual self-efficacy [20,21]. Some studies done with young players indicated that the shooting accuracy [51] and coordination [9] did not improve in lower baskets (2.60 m) when they performed free-throw and jump-shot trials. These differences may be due to the sample characteristics of physical education students vs. young skilled players. The current study shows how the equipment and environment affect students' behavior and skills to resolve the situations they encounter. The experimental intervention provided the conditions to practice, have more variability, and have a higher perception of specific individual efficacy. The strength of the study was the implementation of the experimental condition within natural groups. This approach also shows how the realization of adaptions according to the students' needs in physical education if the teacher has the proper resources is possible. The scaled equipment's effect was assessed from a multidimensional perspective, considering execution, decision-making, occurrence, outcome, self-efficacy, and perception of satisfaction. This approach tried

to evaluate the effect on the specific skills and critical psychological variables that affect the students' holistic development [52].

The current study's findings must be interpreted with caution and are only applicable to this context. Schools divide the academic year into units of 4–5 weeks, which affected the study (numbers of hours per week and the duration of the study). The study analyzed the short-term effects of the equipment adaptations on students without competitive experience in basketball. The study did not assess the students' level of maturation and their fitness capacities (e.g., strength or coordination). These aspects could affect the need to implement this type of adaptation. Future studies should increase the sample size and analyze the medium- and long-term effects of this manipulation on students' self-efficacy, student retention, and levels of practice outside physical education in basketball and other activities. The findings show that in this age group, adapting the equipment to the characteristics of each student should be considered. Ideally, baskets with different heights should be available for this age group so students can have different experiences as well as more variability and adaptation in their physical education classes. This is only possible if the height of the baskets can be adapted. For that reason, it is recommended to have baskets in elementary and middle schools that allow for this. This will enable them to create adapted environments for students according to their characteristics. In this study, the ball size was not manipulated. Future studies should analyze the combined effects of both manipulations in physical education.

5. Conclusions

The use of an adapted basket height in a physical education unit allowed 13-year-old children to have a better shooting technique, especially in the forearm's verticality. The scaled equipment enables students to focus on execution and trajectory as opposed to force application. Adaption of the basket also improved the students' shot participation and the efficacy of their shots, and increased specific individual self-efficacy. The scaled equipment resulted in more variability in the students' solutions (balance between the shot and one-on-one actions). Students in the experimental group made better shot decisions. The basket height adaptation appears to create an experience that fits better in this age group's development. This involved greater specific self-efficacy perception for the experimental group after the intervention. This allows for a transition from mini-basketball to basketball that increases the students' specific individual self-efficacy.

The use of the standard basket height involved different technical and tactical solutions by the students. The standard basket height promotes an individual game dynamic focused on one-on-one situations among physical education students of this age group. The students from the control group increased the occurrence and efficacy of one-on-one situations. However, they did not increase their specific individual self-efficacy. The availability of material that allows the adaptation of the basket height to the student' characteristics could improve teachers' toolkits to achieve the desired learning and self-efficacy, to have positive experiences, and to adhere to exercise and sport practice by students [53].

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