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# Effects of the “MAMI Deporte<sup>®</sup>” Family Sports Program on Parents’ Motivation towards Sport Participation: A Randomized Controlled Intervention

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**Abstract:** As most parents do not meet physical activity (PA) recommendations, new PA promotion strategies need to be developed considering the role of motivation as an essential underlying factor of PA behavior. Recreational sports programs practiced in the family would represent an effective strategy to promote PA for the entire family in general, and for parents in particular. Building upon self-determination theory, the purpose of this study was to examine the effect of the Active Methodology for Improving Sports Initiation (MAMI Deporte<sup>®</sup>) program on parents’ behavioral regulation. The participants were 58 parents (50% men) and 78 children (48.71% boys), who were randomized into a control group (29 parents and 39 children), which followed its habitual sports activity over 8 months, and an experimental group (29 parents and 39 children), which completed the MAMI Deporte<sup>®</sup> program. Specifically, the MAMI Deporte<sup>®</sup> program focused on simultaneous participation between parents and children in multisports activities, including 32 lessons distributed into 2 h/week for 8 months. Pre-and-post-intervention measures were collected. The results showed significant differences in the parents’ level of intrinsic motivation, integrated regulation, identified regulation and introjected regulation in favor of the experimental group. Nonsignificant effects were found for gender. These results were discussed, highlighting the internalization process of the value of sport in the family experienced by parents after the MAMI Deporte<sup>®</sup> family-based sports program.

**Keywords:** self-determined motivation; autonomous motivation; controlled motivation; behavioral regulation; family physical activity intervention; family sports intervention; sport in family

## 1. Introduction

Although regular physical activity (PA) is associated with a myriad of health benefits [1], current global trend studies reveal that the majority of adults fail to meet the recommendations of 150 min/week of moderate-to-vigorous PA proposed by public health administrations [2]. Particularly, parents have been identified as one of the specific at-risk groups regarding PA [3]. For instance, declines in PA levels following the onset of motherhood was the main determining related to changes in PA levels in comparison with 25 other environmental, social, psychological and demographic factors [4]. Thus, prior research broadly suggests the development of family-based PA programs as an effective and useful strategy to increase and maintain PA levels of all family members, including parents [5,6].

Previous research on PA to date has focused mainly on analyzing support from parents for PA on their children’s levels of PA through observational [7–10] and intervention [11,12] methodologies. To the

best of our knowledge, few studies have analyzed the effect that family-based PA interventions could have on parents. Despite this fact, a large variety of differentiated types of family-based PA programs was found in research. Particularly, there were fitness programs exclusively targeting specific family members, such as maternal grandmothers, mothers and daughters [13], fathers and daughters [14] and fathers and children [15]. Moreover, other programs for the whole family were implemented and focused on in-home aerobic exercise [3,16,17], games [18] or outdoor PA [19]. Regardless of the type of PA program, these studies were effective in increasing parents' levels of PA [3,13–19] and fitness [13,16,18]. Additionally, they contributed to improving body composition, resting heart rate [15], fundamental movement skill proficiency [14] and health-related knowledge [19] displayed by parents. Similarly, this type of family-based PA programs was also effective in enhancing parents' psychological experiences such as attitudes towards PA, perceived control [17], exercise intention [19] and self-esteem [18].

By contrast, less attention has been paid to recreational sports practiced in the family as a powerful strategy to promote short- medium- and long-term PA for all family members in general, and for parents in particular [20–22]. The Metodología Activa para la Mejora de la Iniciación al Deporte<sup>®</sup> (MAMI Deporte<sup>®</sup>, Active Methodology for Improving Sports Initiation<sup>®</sup>) program aims to promote family PA by means of sports practiced between parents and children in a shared and simultaneous way [23]. This family-based sports program seeks the integration of active lifestyles into the family sphere. For this purpose, the MAMI Deporte<sup>®</sup> program relies on inclusive, collaborative/cooperative, prosocial and significant learning, where the sport knowledge is built among each of the participants by means of their own inputs and experiences during the different sessions. This family sports program is characterized by a series of instructional strategies showed in Table 1.

**Table 1.** Instructional strategies of the MAMI Deporte<sup>®</sup> program.

Instructional Strategy	
1.	Sport activities in which parents and children participate together, sharing different types of interactions and spaces
2.	Completion of different roles (i.e., player, collaborator or trainer) by parents in the instructional activities
3.	Promotion of multisport activities for motor purposes
4.	Adaptation of sport activities to the children's and parents' level of motor competence
5.	Ad-hoc rule education, where the rules of the activities are defined by consensus
6.	Education in adequate behavior models, which show how to correct, to celebrate a goal, to encourage opponents or to keep calm and controlled
7.	Promotion of communication of both parents and children with an educator, as well as between parents and children

MAMI Deporte<sup>®</sup> has shown to be an effective family-based sports program in improving children's and parents' levels of PA and fitness [24]. Similarly, it also contributed to obtaining a better body composition and higher levels of satisfaction and sports participation by parents [25].

On the other hand, motivation has been widely identified as a determining correlate of short-medium- and long-term PA behavior in adults [26–29]. Self-Determination Theory (SDT) [30–32] currently represents one of the most consistent theoretical approaches for the study of motivation in the different PA settings [26–29]. This motivational perspective constitutes an organic and dialectic metatheory that postulates that individuals are active organisms inherently oriented to dominate the environment and, consequently, to assimilate experiences inside a composite entity of internal processes and structures, denominated as the “self”, promoting autonomous motivation, personality and wellbeing [30,33]. According to theoretical assumptions, the majority of behaviors in which an individual engages are not inherently interesting or enjoyable, but also an internalization process is required to maintain behavioral engagement over time [30,33]. This internalization process is

conceptualized as an inherent human manifestation, whereby a person assimilates a belief, behavioral regulation or attitude and transforms it into a personal goal or value in a progressive way [32].

SDT proposes three differentiated qualities of motivation situated along an internalization or self-determination continuum [30–32]. At the two extremes of such continuum, amotivation (the total absence of internalization and self-regulation regarding a target behavior) and intrinsic motivation (behavior would be undertaken for the inherent pleasure and enjoyment in itself, as well as for curiosity and the search of optimal challenges) would be, respectively, located. Between both extremes, one would find extrinsic motivation, reflecting that behavior would not be undertaken for the activity per se, but as a means to an end. Within extrinsic motivation, SDT discerns four forms of extrinsic motivation in accordance with the degree of behavioral internalization implicit in each of them [30–32]. External regulation would express the complete absence of behavioral internalization, in which behavior would be undertaken to comply with external demands such as obtaining rewards or avoiding punishments. Introjected regulation would represent a partial degree of behavioral internalization, in which behavior would be undertaken to fulfill internal contingencies such as the need to gain self-esteem and pride or to avoid feelings of shame and guilt. Identified regulation would reflect an almost complete degree of behavioral internalization, in which behavior would be undertaken for its personal value and meaning. Integrated regulation would symbolize the highest degree of behavioral internalization, in which behavior would be undertaken for its harmonious and coherent integration with the values, needs and goals that define the self.

SDT postulates that the most autonomous forms of motivation (i.e., intrinsic motivation, integrated regulation and identified regulation) would primarily lead to adaptive affective, behavioral and cognitive consequences [30,31,33]. In this regard, previous research on PA and sport has consistently showed that the three autonomous forms of motivation were positively associated with psychomotor skills, sport-related knowledge and PA participation and adherence [26–28,34,35]. More specifically, previous research has documented that intrinsic motivation was the strongest predictor of objectively measured moderate-to-vigorous PA [36]. Conversely, SDT maintains that both controlled forms of motivation (i.e., introjected regulation and external regulation) and amotivation would primarily foment to maladaptive affective, behavioral and cognitive consequences [30,31,33]. Specifically, previous works have strongly demonstrated that the two controlled forms of motivation along with amotivation had a positive association with boredom, disengagement and physical-sport activity dropout [26–28,34,35].

Yet, despite the importance of motivation as a key factor of PA behavior and, consequently, for PA promotion in adults, there is no evidence to date of studies to examine how family-based PA interventions—including recreational sports programs practiced in the family—may influence parents' motivation. Therefore, the purpose of the present research was to examine the effects of the MAMI Deporte<sup>®</sup> family sports program on parents' behavioral regulation towards sport participation. According to the assumptions outlined by SDT [30,31,33] and following previous studies in other PA settings [26–28,34,35], we hypothesized that there would be statically significant changes in the level of each behavioral regulation after the MAMI Deporte<sup>®</sup> program. Likewise, we expected nonsignificant changes in behavioral regulation for the control group. Particularly, we hypothesized that while nonsignificant differences in levels of each behavioral regulation between the MAMI Deporte<sup>®</sup> and control group would be found at the beginning of the intervention study, there would be significant differences in the six types of behavioral regulation among both groups at the end of the intervention study. More specifically, we hypothesized that the MAMI Deporte<sup>®</sup> family sports program would significantly increase the parents' level of intrinsic motivation, integrated regulation and identified regulation between the beginning and end of the intervention study.

## 2. Materials and Methods

### 2.1. Participants and Setting

The participating sample consisted of 30 families, including 58 parents (29 men and 29 women) aged between 31 and 45 years ( $M_{age} = 41.90$ ,  $SD_{age} = 4.51$ ) and 78 children (38 boys and 40 girls) aged between 6 and 12 years ( $M_{age} = 8.25$ ,  $SD_{age} = 2.20$ ) who took part in the family sports program in a joint and simultaneous manner.

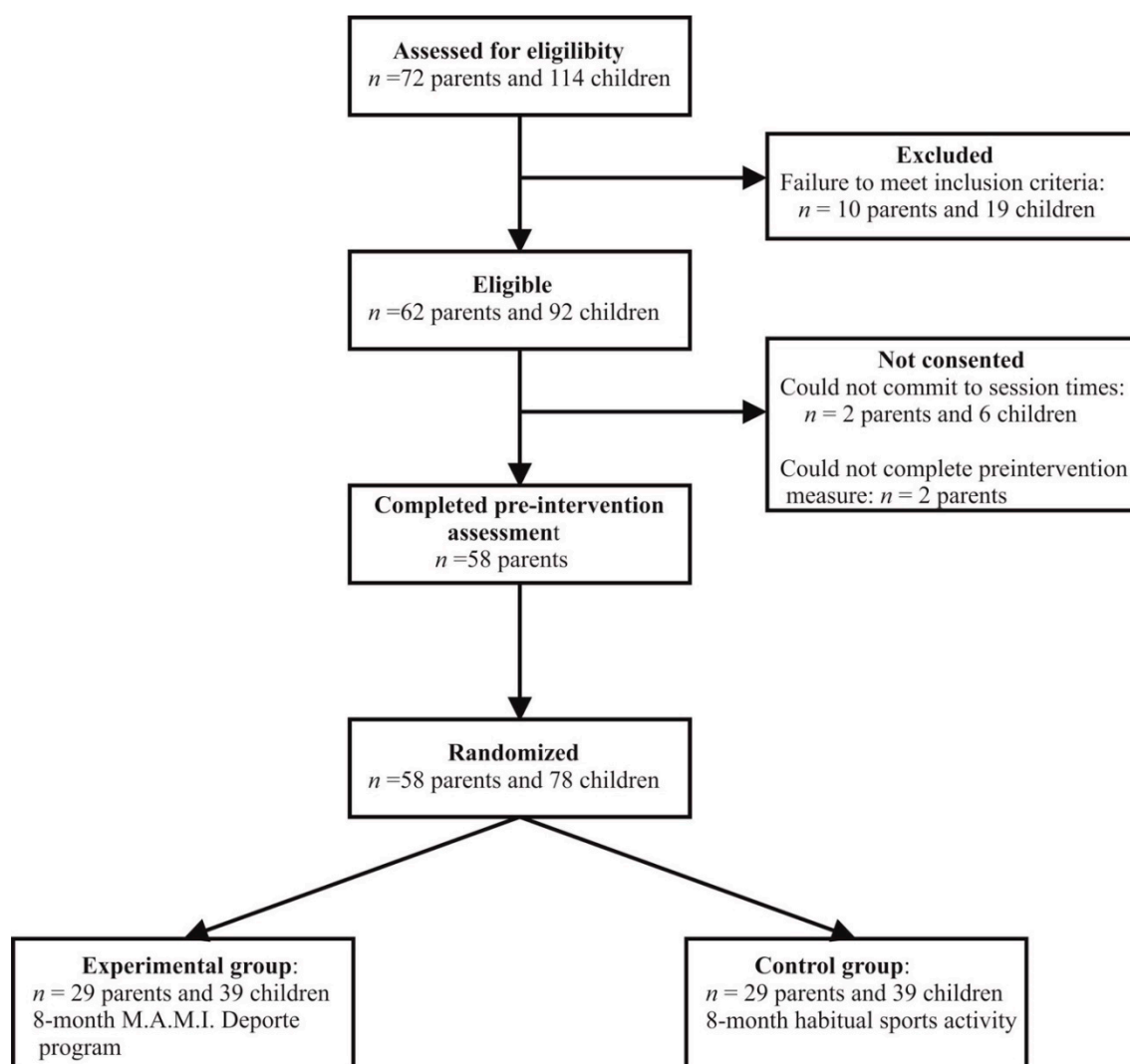
The participating families were recruited via advertisement from social networks, audio-visual media and printed material during September 2015. The researchers screened families for eligibility prior to enrollment in this research. Any family was enrolled in the study dependent on whether both parents and their children met a series of criteria showed in Table 2. Additionally, families had to reside in the metropolitan area of Granada (Spain). The participants received no compensation derived from their participation in this study.

**Table 2.** Criteria followed by family unit.

Parents	Children
To be 18 years old or older	To be between the ages of 6 and 12 years old
To be the biological/adoptive parent of the child	To be the biological/adopted child of the parents
Not being currently participating in another PA intervention study	Not being currently participating in another PA intervention study
At least one parent met 150 min of moderate-to-vigorous PA weekly	At least one of the children met 60 min of moderate-to-vigorous PA daily
Absence of a psychological/physical condition that contraindicates participation in PA	Absence of a psychological/physical condition that contraindicates participation in PA
Absence of a chronic condition limiting mobility	Absence of a chronic condition limiting mobility
Nonuse of medication that could be incompatible with PA	Nonuse of medication that could be incompatible with PA
No pregnancy	

### 2.2. Design and Procedure

The researcher team designed a two-group randomized controlled trial with pre- and postintervention measures. The participating family units were randomly assigned to the experimental or control group at a 1:1 ratio, using a central computerized system (for details see Figure 1). Furthermore, each family unit was aware of its group allocation. In particular, while the MAMI Deporte<sup>®</sup> group (i.e., experimental group) included 29 parents and 39 children, who developed the MAMI Deporte<sup>®</sup> program for 8 months, the control group was made up of 29 parents and 39 children, who followed their habitual sports activity over 8 month [13]. In order to ensure the absence of changes in PA levels and the maintenance of sports practice for this group, a researcher personally interviewed parents monthly on their sports activity over last month. When the MAMI Deporte<sup>®</sup> research project finished, the family units randomly allocated to the control group also carried out the family-based sports program.



**Figure 1.** Participants flow across the randomized controlled study.

The University of Granada Human Research Ethics Board (322/CIEH/2017) approved this research. Furthermore, each participant handed the written informed consent to the research team when they were enrolled in the research. The study measures were completed before the beginning of randomization (pretest or baseline) and after the 8 month intervention program (posttest) in order to assess the possible intervention effects on parents' behavioral regulation. More particularly, the pretest and posttest questionnaires measuring behavioral regulation were administered by the research team in a classroom setting, under the same conditions, without distraction, and with a duration of approximately 15 min. The researchers explained that participation was voluntary and anonymous in this study. For this reason, 2 parents did not wish to complete the questionnaire measuring behavioral regulation at the beginning and end of the intervention program, which gave rise to the final sample of 58 participating parents. The researchers were available to the survey respondents in order to allay any doubts that could be raised during the data collection process. To match the data collected from pre- and postintervention measures, the research team utilized a personal code number that was assigned to each participating parent.

### 2.3. Measures

#### Behavioral Regulation

The Spanish adaptation for adults [37] of the third version of the Behavioral Regulation in Exercise Questionnaire [38,39] was utilized. The instrument was preceded by the stem “Why do I do sports/physical activity . . . ?”. It consisted of 23 items that, grouped into 4 items per factor, measured intrinsic motivation (e.g., “Because I exercise because it’s fun”), integrated regulation (e.g., “Because I consider exercise to be part of my identity”), introjected regulation (e.g., “Because I feel guilty when I don’t exercise”), external regulation (e.g., “Because others say I should”) and amotivation (e.g., “I think that exercising is a waste of time”) and 3 items that assess identified regulation (e.g., “Because I value the benefits of exercise”). Every item was responded to using a 5-point Likert scale ranging from 0 (not true for me) to 4 (very true for me).

### 2.4. Intervention Program

The MAMI Deporte<sup>®</sup> program was developed from October 2015 to May 2016, including 32 lessons for a total of 64 h of sports practice (see Supplementary Online Materials for further details). Its distribution was 2 h each week to facilitate the full participation of the participating families, and thus to avoid any problem that could hamper another out-of-school activities [40]. Each of the following sports was tackled during four consecutive lessons: handball, basketball, football volleyball, judo, swimming, athletics and rhythmic and artistic gymnastics. The planning strategy for sports relied on the following guidelines: (a) the activities were started using three team sports (handball, basketball and football), followed by three individual sports (judo, rhythmic and artistic gymnastics and swimming); (b) the program began with team sports focused on a higher manual predominance (handball and basketball) in order to favor both group integrations and social relationships among members of different families. Then, another team sport with a higher foot predominance (football) was addressed to gain complexity in motor actions and to increase the number of participants required in the different technical–tactical activities to be completed; (c) next, three individual sports with differentiated features were tackled. Particularly, the first of the three individual sports was judo, characterized mainly by interaction skills with the opponent; the second sport was rhythmic and artistic gymnastic, characterized by the use of mobile implement; the third sport was swimming, characterized by the interaction with aquatic environment; (d) the program finished with a team sport (volleyball) to strengthen group cohesion and another individual sport (athletics) to foster individual achievements.

In order to implement the family sports program, a mixed instructional strategy was adopted with the combined practice of games focused on fundamental technical–tactical skills, real game situations and competitions. Regarding parents, each of them was fully integrated into the practice with the totality of the participating children, including their own, in order to promote the parents’ collaboration with every team member. In addition to performing the role of player, the parents also took on the role of instructors for specific tasks. Thus, they were well instructed in a target activity first, and then, they taught it to the children.

Regarding the lesson, at the beginning of this, the objectives, working methodology and activities were explained. In relation to its design, each of them included three clearly differentiated parts. The first of the three parts emphasized the socialization and dynamization of the members of each family unit through games. Specifically, popular and traditional games within a playful, collaborative and participatory climate were developed to facilitate social interactions during these activities, and, as a consequence of this, encouraging families to get to know and relate to each other. The second of the three parts was centered on the practice of different technical and tactical skills of the specific sport that was monthly addressed. Particularly, in the first session of the month, the target sport was presented using a markedly playful approach by means of modified games and small-sided situations. The second and third sessions emphasized both the fundamental technical and tactical skills and knowledge of the rules of that specific sport. In these two sessions, every child had to provide the

remaining of classmates with a new rule of the sport taught. In the fourth session, competitions with real sport situations were conducted with different structures of organization: children team, parent team or mixed teams; that is to say, children and parents' teams competed with each other. The third part had the purpose of promoting healthy eating habits such as a correct hydration before, during and after sports practice, as well as a healthy eating.

### 2.5. Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (IBM SPSS Statistics, version 25.0; Armonk, NY, USA). Firstly, to assess the normality of data, standardized coefficients of skewness and kurtosis were composed. Both coefficients endorse the normality assumption with standardized and absolute values as high as 1.96 [41]. Secondly, to inform on the descriptive statistics, the mean and its standard deviation were estimated for each dependent variable. Thirdly, to inspect reliability of each dependent variable, Cronbach's alpha ( $\alpha$ ) coefficient was estimated, which is suitable with values over 0.70 [42]. Fourthly, to determine the effect of the MAMI Deporte<sup>®</sup> family sports program, a repeated-measures analysis of variance (ANOVA) was run considering 2 levels of treatment (experimental and control) and 2 time points (pretest and posttest). Additionally, post-hoc analyses were performed using dependent and independent *t*-tests. As the motivational processes involved in PA vary depending on gender [26–28,34], the participants' gender was introduced as a covariate. The level of statistical significance was set at  $p < 0.05$ .

### 3. Results

Table 3 displays standardized values below 1.96 in absolute terms for skewness and kurtosis coefficients, reflecting that the observed data followed a normal distribution [41]. Additionally, Cronbach's alpha values higher than 0.70 were obtained for each dependent variable, indicating a suitable level of reliability for each of the six types of behavioral regulation [42]. Table 1 also shows changes in the six dependent variables analyzed in relation to their mean scores between pre- and postintervention measures for the two groups.

**Table 3.** Descriptive statistics and reliability coefficients for behavioral regulation at pretest and posttest for the MAMI Deporte<sup>®</sup> group ( $n = 29$ ) and control group ( $n = 29$ ).

	MAMI Deporte <sup>®</sup> Group								Control Group							
	Pretest				Posttest				Pretest				Posttest			
	$\alpha$	<i>M</i> ( <i>SD</i> )	$\gamma_1$	$\gamma_2$	$\alpha$	<i>M</i> ( <i>SD</i> )	$\gamma_1$	$\gamma_2$	$\alpha$	<i>M</i> ( <i>SD</i> )	$\gamma_1$	$\gamma_2$	$\alpha$	<i>M</i> ( <i>SD</i> )	$\gamma_1$	$\gamma_2$
Intrinsic Motivation	0.89	3.19 (0.62)	-0.34	-0.69	0.79	3.65 (0.54)	-0.98	0.35	0.79	3.17 (0.83)	-0.17	0.08	0.81	3.20 (0.81)	-0.47	-0.05
Integrated Regulation	0.92	2.71 (0.87)	-0.43	-0.56	0.9	3.42 (0.86)	-0.26	-0.56	0.82	2.74 (0.92)	-0.27	-0.21	0.73	2.82 (0.80)	-1.24	1.02
Identified Regulation	0.7	2.97 (0.69)	-0.36	-0.96	0.74	3.59 (0.52)	-1.42	1.86	0.71	2.96 (0.80)	-0.31	-0.19	0.72	2.93 (0.87)	-0.89	1.23
Introjected Regulation	0.75	0.78 (0.67)	0.58	-0.46	0.78	1.23 (0.87)	0.49	-0.73	0.8	0.80 (0.87)	0.92	0.37	0.89	0.83 (1.07)	0.47	-0.40
External Regulation	0.72	0.81 (0.66)	0.59	0.85	0.79	0.95 (0.53)	0.14	0.4	0.9	0.71 (1.14)	-0.49	-1.13	0.83	0.79 (0.94)	-0.70	0.35
Amotivation	0.76	0.20 (0.36)	1.62	1.7	0.81	0.22 (0.41)	0.52	0.6	0.84	0.35 (1.01)	0.25	-1.18	0.86	0.21 (0.95)	0.59	0.78

Note:  $\gamma_1$  = Standardized skewness coefficient;  $\gamma_2$  = standardized kurtosis coefficient.

Table 4 shows a statically significant Time x Group interaction for intrinsic motivation, integrated regulation, identified regulation and introjected regulation. Moreover, a nonsignificant gender effect was found for intrinsic motivation ( $F = 0.56$ ,  $p = 0.457$ ,  $\eta^2_p = 0.01$ ,  $OP = 0.11$ ), integrated regulation ( $F = 0.98$ ,  $p = 0.328$ ,  $\eta^2_p = 0.02$ ,  $OP = 0.16$ ), identified regulation ( $F = 2.75$ ,  $p = 0.103$ ,  $\eta^2_p = 0.05$ ,  $OP = 0.37$ ), introjected regulation ( $F = 0.24$ ,  $p = 0.362$ ,  $\eta^2_p = 0.01$ ,  $OP = 0.08$ ), external regulation ( $F = 0.01$ ,  $p = 0.918$ ,  $\eta^2_p = < 0.01$ ,  $OP = 0.05$ ) and amotivation ( $F = 0.45$ ,  $p = 0.505$ ,  $\eta^2_p = 0.01$ ,  $OP = 0.10$ ).

**Table 4.** Intervention effects for each dependent variable under study.

	<i>F</i>	<i>p</i> -Value	$\eta^2_p$	<i>OP</i>
Intrinsic Motivation	4.68 (1, 55.00)	0.035	0.08	0.56
Integrated Regulation	5.18 (1, 55.00)	0.027	0.09	0.61
Identified Regulation	7.34 (1, 55.00)	0.009	0.12	0.76
Introjected Regulation	4.33 (1, 55.00)	0.042	0.07	0.53
External Regulation	0.10 (1, 55.00)	0.759	<0.01	0.06
Amotivation	0.68 (1, 55.00)	0.415	0.01	0.13

Note:  $\eta^2_p$  = partial eta-squared effect size measure; *OP* = observed power.

With respect to group differences, Table 5 shows the absence of statistically significant differences between the MAMI Deporte<sup>®</sup> group and control group at pretest for each of the six types of behavioral regulation. At posttest, the MAMI Deporte<sup>®</sup> group obtained significantly higher mean scores in intrinsic motivation, integrated regulation, identified regulation and introjected regulation than the control group.

**Table 5.** Mean differences between MAMI Deporte<sup>®</sup> group (*n* = 29) and control group (*n* = 29) at pretest and posttest.

Time	Dependent Variable	<i>M</i> <sub>diff</sub> ( <i>SE</i> )	<i>t</i> ( <i>df</i> )	<i>p</i> -Value	<i>d</i>
Pretest	Intrinsic motivation	0.02 (0.19)	0.08 (56)	0.938	0.02
	Integrated regulation	0.03 (0.24)	0.11 (56)	0.914	0.03
	Identified regulation	0.01 (0.20)	0.01 (56)	0.989	<0.01
	Introjected regulation	0.02 (0.20)	0.10 (56)	0.888	<0.01
	External regulation	0.10 (0.25)	0.40 (56)	0.689	0.10
	Amotivation	0.16 (0.20)	0.77 (56)	0.442	0.20
Posttest	Intrinsic motivation	0.44 (0.19)	2.44 (56)	0.018	0.64
	Integrated regulation	0.60 (0.22)	2.74 (56)	0.008	0.71
	Identified regulation	0.65 (0.18)	3.48 (56)	0.001	0.91
	Introjected regulation	0.40 (0.22)	1.80 (56)	0.049	0.48
	External regulation	0.17 (0.20)	0.84 (56)	0.404	0.04
	Amotivation	0.01 (0.19)	0.05 (56)	0.963	<0.01

Note: *d* = Cohen's *d* effect size measure.

Additionally, Table 6 displays that the MAMI Deporte<sup>®</sup> group obtained statistically significant improvements for intrinsic motivation, integrated regulation, identified regulation and introjected regulation over time. Conversely, no statistically significant changes in the level of the six types of behavioral regulation were found for the control group between pretest and posttest.

**Table 6.** Mean differences from pretest to posttest for all dependent variables in the MAMI Deporte<sup>®</sup> group (*n* = 29) and control group (*n* = 29).

Time	Group	Dependent Variable	<i>M</i> <sub>diff</sub> ( <i>SE</i> )	<i>t</i> ( <i>df</i> )	<i>p</i> -Value	<i>d</i>
From Pretest To Posttest	MAMI Deporte <sup>®</sup> group	Intrinsic Motivation	0.46 (0.16)	2.76 (28)	0.010	0.79
		Integrated Regulation	0.70 (0.24)	2.89 (28)	0.007	0.82
		Identified Regulation	0.62 (0.18)	3.49 (28)	0.002	1.01
		Introjected Regulation	0.44 (0.17)	2.53 (28)	0.018	0.58
		External Regulation	0.14 (0.16)	0.89 (28)	0.383	0.23
		Amotivation	0.02 (0.07)	0.28 (28)	0.781	0.05
	Control group	Intrinsic Motivation	0.03 (0.14)	0.21 (28)	0.833	0.04
		Integrated Regulation	0.08 (0.15)	0.54 (28)	0.595	0.09
		Identified Regulation	0.04 (0.18)	0.21 (28)	0.838	0.05
		Introjected Regulation	0.03 (0.21)	0.16 (28)	0.875	0.03
		External Regulation	0.07 (0.16)	0.47 (28)	0.645	0.07
		Amotivation	0.14 (0.18)	0.80 (28)	0.429	0.14

Note: *d* = Cohen's *d* effect size measure.



#### 4. Discussion

The purpose of this research was to examine the effects of the MAMI Deporte<sup>®</sup> family sports program on parents' behavioral regulation towards sport participation. The results revealed a statistically significant improvement in the parents' level of intrinsic motivation, as well as in integrated, identified and introjected regulation between the beginning and the end of the MAMI Deporte<sup>®</sup> program. Nonsignificant changes in behavioral regulation were found for the control group.

The results from this study showed statistically significant increases for the parents' level of integrated and identified regulation, consistent with one of the hypotheses raised in this study. Moreover, these findings are shown, to some extent, to be in consonance with previous works that revealed an increase in identified regulation in adults after an exercise program [43]. Furthermore, the results are aligned with the findings obtained by Ntoumanis et al. [26], Rodrigues et al. [28] and Teixeira et al. [27], who pointed out that while identified regulation represented the motivational form that exerted the highest influence on initial/short-term PA adherence, integrated regulation was a strong predictor of long-term PA in adults. Similarly, the results from this research highlight the relevance attributed to the internalization process of sport in the family experienced by parents during the MAMI Deporte<sup>®</sup> program. Specifically, the present family sports program not only contributed to developing the approval of value and meaning of the benefits attributed to sport in the family by parents, but it also promoted the coherent and harmonious inclusion of family sports into the system of personal values and needs of each of the parents. This would likely be a consequence of the unique features of the MAMI Deporte<sup>®</sup> program focused mainly on cooperative, inclusive and prosocial environments, use of the agreed rules, small group work, completion of determined roles by parents, as well as joint and simultaneous participation of parents and children in a same space.

The findings also revealed a significant increase in introjected regulation, which despite being contrary to one of the hypotheses raised by the current research, are shown to be in congruence with the results obtained by previous research [43]. In this same vein, previous studies have shown that introjected regulation was positively related to PA participation among adults [26–29,34]. The increase in introjection regulation observed in this work would imply a partial degree of internalization of sport in the family by parents. This would mean that the MAMI Deporte<sup>®</sup> program has been largely used by parents as a means to validate their ego and make self-worth judgements, thus improving their contingent self-esteem and their pride by means of enjoyment of sport in their family. In this manner, parents would feel guilty in the case that they lost any session, given that behavior would be regulated by the individual's internal control. On the other hand, the results obtained for external regulation and amotivation were in contrast to the hypotheses proposed for this research. Furthermore, these findings also contrasted with previous studies [43], given that they found a significant decline in adults' levels of external regulation and amotivation after an exercise program. It is likely that the low levels of external regulation and amotivation found at the beginning of the intervention program should be considered, which makes us think that, although there were changes on both motivational forms, these did not reach the level of statistical significance. Thus, further research is needed to analyze in-depth the effect that the MAMI Deporte<sup>®</sup> program could have on external regulation and amotivation displayed by parents.

The results reflected a statistically significant improvement in the parents' level of intrinsic motivation, which is aligned with the hypotheses proposed by this study, as well as with previous research that examined the influence of an exercise program on motivation in adults [17,43]. Furthermore, Langdon et al. [29], Ntoumanis et al. [26], Rodrigues et al. [28] and Teixeira et al. [27] highlighted the importance of intrinsic motivation, given that it was found to be the most influential form of motivation in long-term PA. Those results may be justified because the unique features of the MAMI Deporte<sup>®</sup> program allow parents to participate in sport activities with their children and, in turn, to encourage social interactions between the members of the family unit. This incites enjoyment, curiosity and pursuit of new challenges in parents when practicing sport with their family. Likewise, the markedly playful perspective with which sport is addressed with motor purposes, the acceptance

of determined roles adjusted to the needs of every parent in each pedagogical situation—as well as the adaptation of the activities to each participant's level of motor competence through small groups—also contributed to developing parents' intrinsic motivation.

Despite the importance of the results from this research and its practical implications, it is necessary to point out the presence of some limitations. Firstly, this study examined motivation at the beginning and end of the MAMI Deporte<sup>®</sup> program using two collection dates. Further studies are needed to deeply examine the effect that the MAMI Deporte<sup>®</sup> program could have on parents' behavioral regulation through obtaining data relative to each of the eight months that composed this family-based sports program. Secondly, motivation of children who took part in this study could not be measured given their relatively low age and their insufficient level of reading comprehension to complete the questionnaire. Additional works should take into consideration the assessment of children's behavioral regulation in order to ascertain the possible effects that the MAMI Deporte<sup>®</sup> program might induce. In this point, the possible differences between parents and children could be categorized in regard to motivation exerted by the MAMI Deporte<sup>®</sup> program. This would imply whether parents and children internalize sport in the family in the same manner or, whether the process, by contrast, happens differently in parents and children. Thirdly, the absence of a follow-up period after the MAMI Deporte<sup>®</sup> program did not allow us to determine if its changes on behavioral regulation are maintained over time. Additional research is required to consider a follow-up period in order to tackle the temporal impact exerted by this type of family sports programs on behavioral regulation displayed by parents.

## 5. Conclusions

The results of this research underscore the importance of the MAMI Deporte<sup>®</sup> program in developing the most autonomous forms of motivation (i.e., intrinsic motivation, integrated regulation and identified regulation) of parents when practicing sports as a family. These findings extend the emerging body of evidence for public health administrations to recommend the enactment of recreational sport programs practiced in the family as a key strategy in improving the parents' motivation involved in sport participation and thereby enhancing the family levels of PA, including parents' levels of PA. Indeed, parents could also be educated in how to autonomously practice sports in the family and be sensitized to how this type of recreational sports programs can lead to positive psychological experiences for all the members of the family unit in general, thanks to the development of the most autonomous forms of motivation in parents in particular.

The results from this research also suggest some instructional strategies that could be enacted by sports coaches and trainers, such as to foster the simultaneous participation between parents and children, completion of different roles in instructional activities, ad-hoc rules education, promotion of communication of both parents and children with an educator or adaptation of activities to the parents' and children's level of motor competence. As a whole, the results of this research suggest that the specific instructional strategies of the MAMI Deporte<sup>®</sup> program could promote the development of the most autonomous forms of motivation in parents.

**Supplementary Materials:** The following are available online at <https://www.youtube.com/watch?v=FEDOXm8GdQ>.

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