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Basic Psychological Needs, Motivation, and Physical Self-Concept Among Preadolescents in Extracurricular Sports

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Abstract

This study examines the extent to which participation in extracurricular sport activities (ESA) satisfies basic psychological needs (BPN) and the type of motivation generated in pre-adolescents (aged 9–12). A quantitative, cross-sectional and correlational study was conducted with 158 participants in sport activities (62 girls [39.2%] and 96 boys [60.8%]) from A Coruña, Spain, using three validated scales (Basic Psychological Needs in Exercise Scale, Perceived Locus Of Causality and Self-concept Form 5). The results indicated high scores for physical self-concept (PSC), as well as in the needs for competence and relatedness, while the need for autonomy was moderate. Autonomous motivations (intrinsic and identified) predominated over controlled ones and amotivation. Positive correlations were found between BPN satisfaction, PSC, and autonomous motivation, while the need for autonomy correlated negatively with amotivation. No gender differences were found in BPN or PSC; however, boys exhibited significantly higher levels of identified, introjected, and external regulations. Multiple regression analyses confirmed that these motivational differences were due to gender and not the type of sport practised. In conclusion, although ESA foster high PSC and autonomous motivation, there is a need to improve methodology and design programs that satisfy the need for autonomy to curb female dropout rates.

Keywords: Self-determination theory; basic psychological needs; motivation; preadolescence; extracurricular sport activities; gender differences

1. Introduction

In recent decades, there has been a radical transformation in the lifestyle of children and adolescents. This phenomenon is of particular concern, as it designates physical inactivity as one of the most significant global public health challenges. In the Spanish context, the prevalence of a sedentary lifestyle and the early discontinuation of sporting activities among children and young people has reached alarming levels (Gasol Foundation Europa, 2025; Tremblay et al., 2022). The present study reveals that a significant proportion of children and adolescents do not meet the World Health Organisation's (WHO) daily recommendations for moderate- to vigorous-intensity physical activity (PA) (World Health Organization, 2023), and that, over a three-and-a-half-year follow-up period, their activity levels have declined significantly. This phenomenon has been demonstrated to contribute to an increase in body mass index and the risk of becoming overweight at an early age (O'Loughlin et al., 2000). In addition, it has been shown to have a direct impact on

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essential psychological variables such as self-esteem, body image perception and physical self-concept (PSC) (Benítez-Sillero et al., 2025).

In order to mitigate this increase in sedentary behaviour among this age group, the school environment provides a highly valuable setting for increasing levels of PA (Wang et al., 2025). Nevertheless, the compulsory school day frequently falls short of the minimum levels recommended by experts. Consequently, extracurricular sports activities (ESA) are of paramount importance in increasing the number of minutes of daily PA in childhood and adolescence (Jiménez Boraita et al., 2022). ESA are defined as teaching and learning activities of a playful, recreational, instructive or educational nature linked to sport (Guerrero Serón, 2009). On a psychological and social level, ESA have been demonstrated to have a positive impact on quality of life, directly influencing key psychological variables such as self-esteem, body image perception and PSC (Benítez-Sillero et al., 2025).

One of the most widely accepted theories of human motivation is Self-Determination Theory (SDT) (Ryan & Deci, 2018). This theory examines different types of motivation and the ways in which social and cultural factors influence people's willingness and initiative. The theory distinguishes between three types of motivation: intrinsic, extrinsic and amotivation. Intrinsic motivation is the most autonomous level, where people act out of their own interest and for the enjoyment of the activity itself. In contrast, extrinsic motivation is triggered by external consequences. Although it can be either autonomous or controlled, extrinsic motivation is subdivided into four categories depending on its internalisation. Controlled forms include external regulation (guided by direct rewards or punishments) and introjected regulation (driven by guilt or fear). On the other hand, autonomous forms include identified regulation, where the value of the activity is accepted, and integrated regulation, where it is assimilated by one's own choice. The latter two are not measured in childhood or adolescence as they require a fully developed personality (Vallerand, 1997). Finally, amotivation is characterised by a lack of intention to perform the behaviour. Unlike the behaviours mentioned above, the individual attaches no value, meaning or utility to the action here, which eliminates any desire to carry it out.

According to SDT's fourth mini-theory, basic psychological needs (BPN) are essential for growth, integrity, and psychological well-being (Deci & Ryan, 2000). They are divided into three strongly correlated dimensions: competence (feeling effective and useful), autonomy (making one's own decisions without external pressure), and relatedness (feeling socially connected and having a sense of belonging). The BPN theory states that the fulfilment or frustration of these three elements directly affects individuals' well-being or distress in all areas of their lives. When these needs are adequately met, intrinsic motivation is fostered and extrinsic motivation is internalized. However, this process depends entirely on the individual, the specific moment, the context and interpersonal relationships, and is therefore dynamic.

In the context of physical education (PE) and sport among adolescents, scientific evidence suggests that sporting environments which meet the three BPNs promote more autonomous forms of motivation (Prado-Botana et al., 2023). Consequently, children experience greater enjoyment, exhibit lower rates of dropping out of sport, and report higher levels of life satisfaction (Heredia-León et al., 2023; Leversen et al., 2012; Nielsen et al., 2024). Furthermore, Almagro et al. (2011) highlight that a task-oriented motivational climate positively predicts fulfilment of the BPN. Similarly, the leadership style of the coach or educator plays a crucial role in meeting these needs and preventing sports-related burnout (Torres-Moya et al., 2026).

Although the scientific literature on primary school pupils remains limited, some studies have demonstrated positive associations between the fulfilment of basic psychological needs and intrinsic motivation, particularly regarding the dimensions of competence and

relatedness (de Bruijn et al., 2022; Sebire et al., 2013). Conversely, the frustration of these needs has been linked to a loss of motivation and interest in physical and sporting activities (Warburton et al., 2019). A critical gap has been identified following a review of the existing literature that justifies this study: most of the evidence on SDT in this age group comes from compulsory PE lessons, while voluntary sports activities have been less widely researched.

Physical self-concept (PSC), defined as an individual's perception of their physical abilities and appearance (J. F. García et al., 2011), is closely linked to the satisfaction of non-elite female athletes in sporting contexts. It has also been shown to correlate strongly with physical exercise and sports participation (Lohbeck et al., 2021; Navarro-Patón et al., 2019). Within the framework of the Theory of Attainment, the sense of competence plays a central role in this relationship: when participants perceive that they can successfully perform motor tasks in a sporting environment, their PSC and intrinsic motivation increase (Ntoumanis, 2001; Standage et al., 2005). Similarly, fulfilling relational needs for belonging and social support fosters a more positive body image (Ullrich-French & Smith, 2009). The autonomy-related BPN, meanwhile, promotes a more authentic and stable assessment of the physical self by reducing dependence on external judgements (Chatzisarantis & Hagger, 2007). Overall, the evidence suggests that satisfaction with all three BPNs positively predicts PSC.

When examining individual differences at this stage of schooling, gender emerges as a highly significant predictor of the relationship BPN and motivation. Previous research suggests that boys and girls perceive and experience out-of-school environments differently. These differences become apparent from the moment they choose a sport. Pre-adolescent boys predominantly opt for cooperative-competitive sports, while girls prefer rhythmic or expressive sports (Marambio Miranda et al., 2019). This influences their levels of PA and their relationship with PE from childhood onwards.

With regard to the fulfilment of their BPN in ESA, boys tend to report greater fulfilment of their needs for competence and relatedness. This is associated with higher levels of intrinsic motivation and a more positive PSC (Gholidahaneh et al., 2020). Conversely, girls of this age tend to participate less in physical activities outside school hours (Lamoneda Prieto & Huertas-Delgado, 2019). Furthermore, they feel less autonomous and capable when participating in sports. This can lead to them giving up exercise at an early stage, which is particularly noticeable as they transition from childhood to adolescence. These differences suggest that motivational rewards and social support affect the psychology of both genders very differently, as highlighted by qualitative studies on the subject (Jägerbrink et al., 2022). Therefore, analysing girls' satisfaction from a gender perspective is essential if we are to design truly inclusive, effective extracurricular sports programmes capable of curbing the dropout rate among girls as they transition into adolescence.

Despite the benefits described, and the importance of studying the relationship between BPN and motivation in pre-adolescence, most research on ESA has focused on adolescents. This focus has led to a lack of empirical information regarding primary education. Pre-adolescence is a key developmental period for establishing active lifestyles and motivations for physical and sporting participation (Sember et al., 2020). For this reason, the present study focuses on schoolchildren aged 9 to 12.

The aim of this study is to analyse the extent to which participation in extracurricular sport activities (ESA) meets the Basic Psychological Needs (BPN) of pre-adolescent athletes (aged 9–12) and the type of motivation associated with such participation. This area has currently received limited attention in both secondary and primary education; this study focuses on the latter. The study makes two contributions: firstly, it provides information on Self-Determination Theory, focusing on motivation and BPNs in pre-adolescence; and,

secondly, it identifies the influence of gender and PSC (two key variables in the research) as predictors of motivation towards ESA.

The specific objectives of this study are: (a) to determine the level of physical self-concept, body image satisfaction, and motivation towards extracurricular sporting activities among pupils in the third cycle of primary education; (b) to analyse the correlations between the different variables; and (c) to identify gender differences in the studied variables.

The hypotheses are based on the findings of the specialist literature and the objectives of the study. Given that the available evidence stems mainly from research into adolescence, its applicability is greatest amongst the adolescent population. For this reason, possible variations are anticipated due to differences between the age groups analysed. On this basis, the following hypotheses were formulated: (1) in primary education, high scores will be obtained for physical self-concept, BPN and the more self-determined forms of motivation (intrinsic and identified), whilst the less self-determined forms of motivation will show moderate scores. (2) It is expected that all variables will be positively correlated with one another, including physical self-concept, satisfaction with BPN and the more self-determined forms of motivation (intrinsic and identified). Conversely, it is anticipated that introjected regulation, external regulation and demotivation will show negative correlations with the aforementioned variables. (3) Gender differences are expected across all variables studied, with males showing higher scores for self-concept, BPN satisfaction and more self-determined motivations (intrinsic and identified), whilst females will score higher in the remaining motivational categories (introjected, external and demotivation).

2. Materials and Methods

2.1. Study Design and Participants

A quantitative methodology was employed, using a non-experimental, cross-sectional and correlational design (Sáez López, 2017).

Non-probabilistic convenience sampling was used, based on the accessibility of the schools.

The sample comprised of 158 pupils aged 9–12 from 9 schools and 8 sports clubs located in A Coruña (Spain). The mean age of the participants was 10.5 years (SD = 0.780), with 62 girls (39.2%) and 96 boys (60.8%). A total of 33.5% took part in individual sports (modern dance, rhythmic gymnastics, skating, swimming and judo) and 66.5% in team sports (basketball, handball, football, futsal, tennis, hockey and volleyball). The people who answered only gave one answer for each sport. If they took part in more than one sport and the group for the other sport was surveyed, they were not asked to complete the questionnaire a second time.

2.2. Instruments

Pupil satisfaction with the ESA was assessed using a survey, for which a questionnaire was designed. Three previously validated scales widely used in PE research were employed: The Basic Psychological Needs in Exercise Scale, the Perceived Locus of Causality and the Physical Dimension of the Self-Concept Form 5 Scale.

The Basic Psychological Needs in Exercise Scale was used. The Spanish version of this scale, which was adapted for physical education by Moreno Murcia et al. (2008), was used. Originally designed by Vlachopoulos and Michailidou (2009), the scale consists of 12 items, which are grouped into three dimensions: autonomy, competence, and relatedness (four items per dimension). Each item begins with the statement 'In my PE lessons. . .' and is rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), with the score for each dimension calculated as the mean of its four items, yielding a possible range of 1 to 5 and higher values indicating greater satisfaction of that need. The Cronbach's alpha

coefficients obtained were as follows: autonomy, 0.68; competence, 0.55; and relatedness, 0.78. Although the Cronbach's alpha value for the competence dimension was below 0.70 ($\alpha = 0.55$), this result is considered acceptable given the exploratory nature of the study and the small number of items in the scale (Hair et al., 2019).

Perceived Locus of Causality (PLOC). Developed by Goudas et al. (1994) and translated into Spanish by Moreno Murcia et al. (2009), this instrument was used to determine the types of motivation perceived by the pupils. The instrument consists of 20 items (4 for each factor) and begins with the statement "I take part in this Extracurricular Activity class…", or "I take part in this training…" rated on a Likert scale from 1 to 5 with each factor scored as the mean of its four items (range 1–5); higher scores reflect a stronger endorsement of that type of regulation. The reliability coefficients were: intrinsic regulation, 0.68; identified regulation, 0.59; introjected regulation, 0.80; external regulation, 0.72; and demotivation, 0.74.

Self-Concept Form 5 (physical dimension). Designed by F. García and Musitu (1999), this scale uses 30 items to assess the five main domains of self-concept: academic, social, emotional, family and physical. In the present study, only the items corresponding to the physical dimension were used. These are rated on a scale from 1 (strongly disagree) to 10 (strongly agree), calculated as the mean of its 6 items (range 1–10), with higher values reflecting a more positive physical self-perception. Although this questionnaire was initially designed on a scale of 0 to 99, previous data collection rounds showed that students found it difficult to provide nuanced responses on such a broad scale. Furthermore, scales with too many points can make the task of responding excessively demanding, leading participants to take shortcuts rather than carefully considering all the options across the scale (Krosnick & Fabrigar, 1997). The Cronbach's alpha coefficient for physical self-concept was 0.78.

2.3. Procedures

Data collection took place between April and June 2025 and January and April 2026. Initially, contact was made with the Parents' Associations at the schools for activities in schools, and with the management teams for activities at sports clubs. They were informed of the study's objectives and procedure. Once the management teams of the organisations running the activities had agreed to take part, the participants were briefed on the study's focus and given an informed consent form for their families; only those with permission from their parents or legal guardians took part. The printed questionnaire was handed out to the pupils during the time (or immediately before or after) the extracurricular sporting activity took place. The completion of the questionnaire was supervised by one of the researchers, who was responsible for distributing and collecting the questionnaires, as well as answering any relevant questions from the participants.

2.4. Ethical Considerations

All procedures complied with the ethical principles of the Declaration of Helsinki (World Medical Association, 2013). Ethical approval was granted by the Ethics Committee for Research and Teaching of the Universidade da Coruña (CEID-UDC Informe 2024-058). Participants received information regarding study aims and procedures and provided informed consent before participation.

2.5. Statistical Analysis

The statistical software SPSS 29.0 and Jamovi 2.7.29 were used to analyse the data. The analysis included descriptive statistics, bivariate correlations, comparisons of means and association analyses using the chi-squared test for categorical variables. Non-parametric statistical methods were used, due to the moderate sample size and the failure to meet the assumptions of normality and equality of variances.

For the first objective, means and standard deviations were calculated for the variables of gender, self-concept, basic psychological needs and motivation towards ESA. To determine differences between them, pairwise comparisons were carried out using the Wilcoxon signed-rank test (paired samples). To control for Type I error associated with multiple comparisons, Bonferroni corrections were applied within each set of comparisons. For pairwise Wilcoxon comparisons, effect sizes were estimated using the rank-biserial correlation. Correlations between the different variables (second objective) were analysed using Spearman's correlation coefficient. Comparisons by gender (third objective) were analysed using the Mann–Whitney U test (independent samples) and the chi-squared test for categorical variables. In order to analyse the independent effect of gender and sport type on the types of motivation where gender differences were found, multiple linear regression analyses were carried out. Given that the sample size was small and did not meet the assumptions of normality, the regression coefficients were estimated using a bootstrap resampling procedure (1000 samples), employing 95% bias- and acceleration-corrected (BCa) confidence intervals.

3. Results

To improve the structure of this section, the results are organised around the study's three specific objectives.

3.1. Levels of Satisfaction Amongst BPNs, Types of Motivation and PSC (OBJ 1)

According to Table 1, the participants have a high self-concept, with a score of over 8 on a scale where the maximum score is 10.

Table 1. Descriptives of PSC, PNB and Motivation towards ESA (n = 158).

Variables		M	SD
Self-Concept Form 5	Physical Self-concept	8.03	1.315
PBN scale	Autonomy	3.58	0.515
	Competence	4.26	0.677
	Relatedness	4.36	0.733
PLOC scale	Intrinsic R.	4.22	0.667
	Identified R.	4.23	1.163
	Introjected R.	2.90	1.073
	External R.	2.19	0.958
	Amotivation	1.73	1.315

Note. PBN Scale = Basic Psychological Needs Scale; PLOC Scale = Perceived Locus of Causality Scale; Intrinsic R. = Intrinsic regulation; Identified R. = Identified regulation; Introjected R. = Introjected regulation; External R. = External regulation.

Pairwise comparisons of the variables were carried out using the Wilcoxon rank-sum test to describe the scores obtained on the BPN satisfaction and motivation scales. There are very marked differences between autonomy and both competence and relatedness ($p < 0.001$), as evidenced by high effect sizes ($rrb = -0.88$ and -0.84, respectively). This suggests that autonomy behaves distinctly differently from the other two dimensions, resulting in a lower score. The autonomy score is moderate, as it is slightly above the midpoint of the scale. In contrast, competence and relatedness achieve higher scores, exceeding four points. However, the difference between competence and relatedness was no longer statistically significant after Bonferroni adjustment (p adjusted = 0.120). This suggests that both variables exhibit similar patterns in the context of the ESA.

No significant differences were found between intrinsic and identified motivation ($p > 0.05$), but significant differences were found in all other comparisons between motivation categories ($p < 0.001$). The Bonferroni adjustment did not alter this pattern of

results. The two most self-determined types of motivation scored very highly, in contrast to introjected, external and amotivational motivation, which scored very low.

3.2. Correlation Between Satisfaction Amongst BPNs, Types of Motivation and PSC (OBJ 2)

As is typical in the context of SDT, there is a strong positive correlation between the three basic psychological needs (see Table 2). The strongest correlation is between autonomy and competence. Those who perceive themselves as more competent also tend to believe that their activities are more aligned with their preferences, and consequently feel more integrated (or at ease) within the group.

Table 2. Correlations of PSC, PNB and Motivation towards ESA (n = 158).

	A	C	R	IT	ID	IN	EX	AM
A								
C	0.46 ***							
R	0.24 **	0.25 **						
IT	0.29 ***	0.42 ***	0.34 ***					
ID	0.21 **	0.38 ***	0.18 *	0.46 ***				
IN	0.09	0.18 *	0.10	0.28 ***	0.49 ***			
EX	−0.14	0.04	0.17 *	0.15	0.23 **	0.65 ***		
AM	−0.16 *	−0.12	0.02	−0.24 **	−0.02	0.33 ***	0.52 ***	
PSC	0.14	0.35 ***	0.25 **	0.24 **	0.14	0.06	0.11	0.00

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; A = PBN Autonomy; C = PBN Competence; R = PBN Relatedness; IT = Intrinsic regulation; ID = Identified regulation; IN = Introjected regulation; EX = External regulation; AM = Amotivation; PSC = Physical Self-Concept.

The need for autonomy is more closely linked to teaching methodology, meaning it is not directly related to PSC. However, fulfilling the need for competence and relatedness has a significant positive impact on self-concept. People who feel more competent in the ESA have a higher PSC. The same applies to relationships: those who feel more integrated with the group during these activities rate their PSC significantly higher (and vice versa).

In line with the SDT, there is a correlation between basic psychological needs and types of motivation. Basic psychological needs are positively correlated with the two most self-determined forms of motivation. Furthermore, the psychological need for autonomy is negatively correlated with amotivation. When athletes' activities align with their preferences, they are less likely to feel indifferent towards them.

As expected in the SDT, the relationship between the different types of motivation also behaves as expected. Those that are closest to one another show a significant positive correlation. Moreover, a significant inverse correlation is found between intrinsic motivation and extrinsic motivation, as well as amotivation. There is no correlation between the types of motivation that are furthest apart on the motivational spectrum.

3.3. Satisfaction Among BPNs, Types of Motivation and Body Image: Gender Analysis (OBJ 3)

As can be seen in Table 3, there were no significant differences in satisfaction with any of the three BPNs between the groups of girls and boys. Similarly, there were no significant differences in PSC. Athletes who enrol in sports clubs tend to have a high PSC, with scores close to 8 out of 10. While boys are more motivated than girls in all areas, significant differences are only found in three categories of motivation: identified, introjected and external.

Table 3. PSC, BPNs and motivation towards ESA. Comparative between boys and girls. Man-Whitney test (n = 158).

Variables		Gender				Z	r
		Boys (n = 96)		Girls (n = 62)			
		M	*SD*	*M*	*SD*		
S-C Form 5	Physical Self-concept	**7.96**	1.408	8.13	1.158	−0.581	−0.054
BPN Scale	Autonomy	3.58	0.92	3.58	0.543	−0.333	0.031
	Competence	4.29	0.527	4.20	0.496	−1.434	0.133
	Relatedness	4.39	0.673	4.31	0.686	−0.641	0.059
PLOC Scale	Intrinsic R.	4.25	0.750	4.17	0.708	−0.967	0.090
	Identified R.	4.33	0.640	4.07	0.682	−2.597 **	0.242
	Introjected R.	3.24	1.122	2.38	1.030	−4.550 ***	0.428
	External R.	2.43	1.152	1.81	0.812	−3.302 ***	0.308
	Amotivation	1.84	1.408	1.56	1.158	−1.335	0.054

Note. ** $p < 0.01$, *** $p < 0.001$.

Given that participation in the ESA is voluntary, the absence of differences in the BPNs can be interpreted in two ways, depending on the distribution of this participation:

- If boys and girls attend the same type of ESA, this would mean that these activities equally meet the BPN of both groups. In other words, the same activity would meet the needs of both groups equally.
- If the two groups take part in different activities, this would mean that they attend activities that best meet their specific needs. In other words, there would be activities that better meet the needs of one group or the other.

To clarify this issue, a chi-squared test was carried out to examine the relationship between gender and the type of sport practised. The results revealed a statistically significant association, $X^2_{(1, 158)} = 48.60$, $p < 0.001$. Analysis of the frequencies revealed that girls were over-represented in individual sports (41 compared to 12 boys), while boys were over-represented in team sports (84 compared to 21 girls). Therefore, the gender comparison must be interpreted within the context of segregated participation, where one gender predominates in a particular sport, rather than in a context of mixed participation and gender balance.

Given this association between gender and type of sport, collinearity diagnostics were examined before interpreting the regression models. The results showed tolerance values of 0.692 and VIF values of 1.444 for both predictors, together with a maximum condition index of 14.31, suggesting no serious collinearity problems. However, the sample distribution was uneven, with a low representation of boys in individual sports (n = 12), a circumstance that should be taken into account when interpreting the findings.

This uneven distribution must be considered when we are trying to understand why people are motivated to use ESA. To determine whether the observed differences in motivation were due to gender or the type of sport (individual vs. team), we conducted several linear regression analyses. These let us look at both variables at the same time and control for their possible relationship to each other. To do this, bootstrap procedures were used to estimate the multiple linear regression models.

In the analysis of the identified regulation, the model did not reach statistical significance, $F_{(2, 155)} = 3.03$, $p = 0.051$, $R^2 = 0.038$, although gender showed a significant effect of small magnitude (B = −0.293, 95% CI [−0.592, −0.005]), whereas the type of sport was not significant (B = −0.062, 95% CI [−0.363, 0.200]).

In contrast, in the introjected regulation, the model was significant, $F_{(2, 155)} = 13.22$, $p < 0.001$, $R^2 = 0.146$, with gender as a significant predictor (B = −0.683, 95% CI [−1.100, −0.251]) and no effect of sport type (B = 0.338, 95% CI [−0.104, 0.787]).

Similarly, for external motivation, the model was also significant, $F_{(2, 155)} = 7.54$, $p < 0.001$, $R^2 = 0.089$, with gender being a significant predictor (B = −0.486, 95% CI [−0.799, −0.144]), whilst the type of sport showed no significant effects (B = 0.251, 95% CI [−0.093, 0.572]).

Overall, the results suggest a tendency for gender to be associated with the more controlled forms of motivation (external and introjected), whereas its relationship with identified regulation appears weaker. However, the models explain only a small proportion of the variance. In contrast, the type of sport does not emerge as a reliable predictor of motivation. Therefore, any observed differences in motivation seem more likely to be related to gender than to the type of sport practised, although these findings should be interpreted with caution given the limited explanatory power of the models.

4. Discussion

To make the results easier to understand and interpret, the discussion is structured around the three specific objectives of the study.

4.1. Levels of Satisfaction Amongst BPNs, Types of Motivation and PSC (OBJ 1)

The fact that the need for autonomy is less important to participants than the other needs seems to indicate that the teaching methodology at the ESA is not aligned with their preferences. They do not feel that their views are considered when selecting the content and activities. This highlights the relationship between the methodology used by coaches/instructors and learner autonomy (Hernández et al., 2022), as well as the need to update coaching approaches (Cheon & Reeve, 2013).

The high prevalence of scores for intrinsic and identified regulation, as opposed to the other categories, is consistent with the voluntary nature of ESA (Denault & Guay, 2017). As athletes choose to participate voluntarily, their commitment to the sport stems primarily from intrinsic interest rather than external rewards. This is particularly relevant in the context of the current debate on the social function of sports and leisure activities. Some argue that, in the effort to facilitate a work-life balance, these activities risk becoming 'daycare facilities' where children are obliged to attend while their parents are at work (Elkind, 1981). On the other hand, it is argued that these activities provide pre-adolescents with an opportunity to spend more time on activities they enjoy (Suárez Ortega & Moreno Carmona, 2022).

The results of this study therefore support this latter perspective, confirming that participants are personally interested in these activities and are motivated to undertake them independently. This suggests active involvement in selecting these activities (Castro-García et al., 2026; Gómez López et al., 2021). Consequently, while these activities support work-life balance, this does not negate the fact that participants are personally interested in and therefore intrinsically motivated by the activities they attend.

4.2. Correlation Between Satisfaction Amongst BPNs, Types of Motivation and PSC (OBJ 2)

The results suggest that fulfilling the three BPNs is associated with a more autonomous motivation to participate in ESA. Specifically, higher levels of perceived autonomy have been observed to be associated with lower levels of amotivation, suggesting a potential link with lower disinterest or disengagement from PE (Jankauskiene et al., 2022). However, this study also found that satisfaction with autonomy was lower than in previous studies (Heredia-León et al., 2023; Leversen et al., 2012; Nielsen et al., 2024). This highlights a clear

area for improvement for organisers of ESA, suggesting that greater choice and influence over methodologies could be associated with a lower likelihood of losing interest in the medium term (Rodríguez-Rosado et al., 2025).

Furthermore, the relationships observed between the various types of regulation align with the continuum proposed by the SDT (Ryan & Deci, 2018). The data confirm that forms of regulation that are closer together on the continuum exhibit stronger positive associations, whereas those that are further apart show weaker or inverse relationships (Chatzisarantis & Hagger, 2007). Moreover, dependence on rewards, punishments, or external pressures (characteristic of introjected and external regulation) was associated with higher levels of amotivation. This finding is consistent with motivational theory, which suggests that a reliance on external pressures combined with low intrinsic motivation has been linked to demotivation and dropping out of sport early (Moreno Vitoria et al., 2025).

Furthermore, an examination of the PSC reveals that individuals with higher levels of PSC tend to report greater fulfilment of their needs for competence and relatedness, as well as higher levels of personal satisfaction (intrinsic motivation) when participating in ESA. This is consistent with models that identify competition and social relationships as the primary predictors of participation at these developmental stages (Standage et al., 2005).

The satisfaction of the BPNs in ESA, particularly autonomy (the least addressed), is a key pillar for improving the quality of motivation in athletes. A motivational climate that supports autonomy has been associated with higher intrinsic motivation and lower disengagement; this pattern could also be related, albeit indirectly, to PSC of preadolescents, as has already been demonstrated in studies relating to PE (Dai et al., 2024; Gil-Arias et al., 2020).

4.3. Satisfaction Among BPNs, TYPES of Motivation and Body Image: Gender Analysis (OBJ 3)

The absence of significant differences between boys and girls in terms of the fulfilment of their BPNs suggests that, within the sample assessed, both groups perceive similar levels of autonomy, competence and relatedness in the context of ESA. This finding could be interpreted in terms of a self-selection phenomenon (Elston, 2021), whereby participants tend to enroll in and actively engage with those activities that best satisfy their BPN (Heredia-León et al., 2023).

From this perspective, certain sporting activities may be adapting in different ways to the preferences, stereotypes and role expectations of each gender (Oliver & Kirk, 2015; Rodríguez-Iribarren et al., 2021). Consequently, sports that traditionally satisfy more to boys' needs for achievement or competitiveness may be associated with predominantly male participation, whilst activities that better meet girls' needs for self-expression or social interaction would attract greater female participation (Benítez-Sillero et al., 2025).

Therefore, the fact that no differences were found in the BPN scores does not necessarily imply that ESA offer identical experiences for both groups, but rather that each group tends to seek out sporting contexts where their BPNs are already reasonably satisfied, whilst avoiding those that cause them frustration (Soares et al., 2013).

The levels of PSC found are high and show no differences between boys and girls. This suggests that ESA may act as a filter, whereby those with low PSC tend to exclude themselves. For this reason, the present study does not detect the gender bias that typically appears in other contexts, where boys tend to report a higher PSC (Findlay & Bowker, 2007; Vernetta et al., 2023). Furthermore, those who enroll in ESA already possess a positive perception of their bodies and their motor skills, something previously demonstrated in university settings (Álvarez Rivera et al., 2015).

This finding calls for a rethink of the approach to these activities, as they seem to attract mainly those with a positive body image, leading others to exclude themselves and not take

part. In an increasingly sedentary society, this becomes a problem. It is therefore necessary to diversify the range of activities on offer and improve the methodology of ESA in order to attract those children who, whilst not having a high body image, could benefit from taking part in sport (Campos Izquierdo & González Rivera, 2010; Christiansen et al., 2018).

In terms of motivation, children tend to score higher on introjected and external regulation, a phenomenon that may be related to gender socialisation. Traditionally, sport has been associated with masculine roles that emphasise values such as competitiveness, performance, and demonstrating ability (Antunes et al., 2024). This may be linked to the internalisation of external norms and expectations. This pattern may be associated with boys' greater tendency to participate to meet external expectations, avoid feelings of guilt or prove their worth. This could relate into higher levels of self-demand and perceived pressure (Berger et al., 2021).

Girls, on the other hand, experience sport in contexts where there is less pressure to perform. This could explain why they exhibit lower levels of these forms of controlled motivation. While participation in ESA satisfies both boys' and girls' BPNs, the results suggest that they differ in how they internalise their commitment to the activity (Benítez-Sillero et al., 2025).

From an applied perspective, the findings suggest a need to design differentiated teaching strategies to promote participation. For children, interventions should aim to reduce performance-related pressure and mitigate environments that encourage social comparison, prioritising instead a focus on autonomy, enjoyment, decision-making and learning (D'Amours et al., 2025).

The data show that, in the case of girls, the problem does not lie in the level of motivation among those who already participate (which is excellent and highly self-determined), but rather in the provision of extracurricular activities that cater to the interests of a much smaller proportion of girls than boys. Therefore, the main focus should be on identifying and developing strategies to encourage the recruitment and retention of girls who do not currently participate in ESA. This can be achieved by creating more accessible, attractive and inclusive environments that reduce barriers to entry and expand opportunities to participate.

5. Conclusions

The first aim of the study was to analyse levels of satisfaction, types of motivation, and PSC among students taking part in the ESA. The results revealed high levels of satisfaction with regard to competence and relatedness, as well as a positive PSC. Autonomy scores, however, were more moderate. Regarding motivation, more self-determined forms (intrinsic and identified) predominated, with low levels of controlled forms and amotivation.

These findings provide partial support for Hypothesis 1, since, although a high level of satisfaction with the three basic psychological needs was expected, the lower score for autonomy suggests there is room for improvement from a methodological perspective. Nevertheless, the motivational profile observed is consistent with the voluntary nature of the activities, indicating that participation generally stems from personal interests rather than external pressures.

The second objective was to analyse the relationship between the fulfilment of basic psychological needs and types of motivation in relation to PSC. The results showed that greater fulfilment of these needs was associated with more self-determined forms of motivation, particularly autonomy, which was negatively correlated with amotivation. Additionally, participants with a higher PSC were found to have higher levels of fulfilment of the needs for competence and relatedness, as well as higher levels of intrinsic motivation.

In this regard, the results confirm Hypothesis 2, revealing a pattern consistent with the motivational continuum. This pattern shows that forms of regulation that are close together have stronger positive associations, while those that are further apart have weaker or inverse relationships. Furthermore, the results reinforce the idea that fulfilling basic psychological needs is key to promoting motivation and, indirectly, PSC.

The third objective was to analyse changes in the studied variables according to gender. The results suggest that there are no significant differences between boys and girls in terms of satisfaction with BPNs or PSC. However, differences were observed in certain forms of motivation, specifically identified, introjected and external regulation, with boys achieving higher scores. Further analysis shows that these differences are due to the gender variable and not the type of sport practised, despite clear segregation in participation between individual and team sports.

In light of these results, Hypothesis 3 cannot be confirmed and, in some respects, is contradicted by the findings. No gender differences were found in key variables such as BPN satisfaction and PSC, suggesting that boys and girls derive similarly positive experiences from their participation in ESA (possibly due to self-selection processes, whereby boys and girls participate in different activities). Although boys scored higher than girls in identified regulation, the most notable finding was that they also reported significantly higher levels of introjected and external regulation, contrary to the original hypothesis, which predicted higher levels of controlled motivation among girls. Furthermore, these differences remained significant after controlling for sport type, indicating that they are more strongly associated with gender than with the specific sport practised. These unexpected results highlight the complexity of gender differences in youth sport motivation and suggest that gender-related sociocultural influences may shape motivational processes in ways that differ from traditional assumptions.

From a practical perspective, the findings suggest that ESA can provide similarly positive psychological experiences for both boys and girls, particularly regarding PSC and the satisfaction of BPN. However, this apparent similarity does not necessarily indicate that the same activities satisfy boys and girls to the same extent. Rather, it may reflect a process whereby certain activities are perceived as more appealing or satisfying for boys, whereas others are more appealing or satisfying for girls. Consistent with this pattern, boys and girls tend to participate in different ESA, resulting in a degree of gender-segregated participation. Consequently, comparable psychological outcomes may emerge not because boys and girls experience the same sports in the same way, but because they are participating in activities that are perceived as especially meaningful and rewarding within their respective groups. The comparatively lower levels of autonomy identified in the present study highlight the importance of adopting participant-centred approaches that offer meaningful choices, encourage active involvement in decision-making, and support personal initiative. Those responsible for ESA should therefore prioritise the creation of autonomy-supportive environments that not only sustain participation but also strengthen self-determined motivation and positive developmental outcomes. Furthermore, future research should explore whether the development of more autonomy-supportive sport contexts could help reduce gender-segregated participation patterns by broadening the range of activities perceived as meaningful and attractive for both boys and girls, while maintaining similarly high levels of psychological benefits across genders.

Limitations of the Study

The limitations of the study include the following aspects, as described below:

- The cross-sectional design does not allow causal relationships to be established between BPN fulfilment, motivation, and physical self-concept; associations should

be read as correlational. Longitudinal designs are needed to confirm directionality and to test the self-selection and motivational dropout processes proposed here as interpretative hypotheses.

- A further limitation concerns the absence of an a priori power analysis to determine the required sample size. As participants were recruited from the available population meeting the study criteria, the final sample size was determined by practical considerations. Consequently, the study may have been underpowered to detect small effects, and the findings should therefore be interpreted with appropriate caution.
- The sample was limited to schools and sport clubs in a single area of Galicia, selected based on accessibility. Future studies should include a larger, more geographically diverse sample across different sports.
- One limitation of this study concerns the potential influence of sport type on the gender-based comparisons. Within the sample, boys and girls were not evenly distributed across the different sport modalities, making it difficult to completely disentangle the effects attributable to gender from those associated with the characteristics of the sports practised. To address this potential source of confounding, regression analyses were conducted for those variables in which significant gender differences were identified. The results indicated that gender accounted for a significant proportion of the observed variance, whereas sport type did not make a statistically significant contribution. Nevertheless, these findings should be interpreted with caution, as the relationship between gender and sport participation is complex and warrants further investigation. In this regard, future research should adopt more nuanced classifications of sport contexts by examining specific sport modalities rather than relying sole.
- The competence subscale showed poor internal consistency, which limits the reliability of this score and, by extension, of the comparisons made between the three basic psychological needs. It would be advisable to review or adapt the items on this subscale in future studies involving a pre-adolescent population.
- The instruments used (BPNES, PLOC, AF5) were validated mainly in adolescents and adults. Their application to 9–12 years-old, despite previous use in similar studies, may have affected construct validity and could partly explain the lower internal consistency observed.

Future research should expand sample size and sports diversity, further explore the gender variable-including qualitative work to understand girls' underrepresentation in ESA and test interventions to improve participation and autonomy for both boys and girls.

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Abbreviations

The following abbreviations are used in this manuscript:

BPN	Basic Psychological Needs
BPNES	Basic Psychological Needs in Exercise Scale
ESA	Extracurricular Sport Activities
PA	Physical Activity
PE	Physical Education
PLOC	Perceived Locus of Causality
PSC	Physical Self-Concept
SDT	Self-Determination Theory

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