

# SPORT EDUCATION MODEL AND SELF-DETERMINATION THEORY: AN INTERVENTION IN SECONDARY SCHOOL CHILDREN

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## Abstract:

Using self-determination theory as a guiding framework, this study analyzed the impact of the Sport Education Model in self-determination and motivation, psychological basic need thwarting, enjoyment-satisfaction, boredom, and intention to be physically active in Physical Education (PE) of secondary school students in Spain. Two groups were selected for the study: an experimental group (EG; n=43), which received 19 volleyball lessons following the Sport Education Model, and a control group (CG; n=43), which received 19 traditional Physical Education lessons. Pre- and post-intervention measures were taken in both groups. The results showed significant improvements in intrinsic motivation in EG. The results are discussed, and the suitability of the Sport Education Model to improve self-determined behaviors in Physical Education is emphasized.

**Key words:** *motivation, basic psychological needs, adolescents, intention to be physically active, physical activity*

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## Introduction

Motivation in physical education classes is essential to furthering learning outcomes and achieving course objectives. Several studies have confirmed a positive impact of the Sport Education Model (Siedentop, 1994) on motivation (Wallhead & Ntoumanis, 2004; Hastie, Martínez de Ojeda, & Calderón Luquín, 2011; Perlman, 2011) and positive development of students (Wallhead & O'Sullivan, 2005). Thus, this paper analyzes an intervention program based on the Sport Education model and its influence on motivation, well-being, and the intention to engage in sports among adolescent students.

Self-determination theory provides a useful framework for understanding motivational processes (Deci & Ryan, 1985; Ryan & Deci, 2002). The cornerstone of this theory relates to motivational regulation mechanisms that subjects use while performing an activity, such as the activities involved in a physical education class. In examining an individual's autonomy over his/her own behavior, Ryan and Deci (2000) distinguish between intrinsic motivation (based on the pleasure and fun of participating in an activity), identified regulation (when the behavior is considered beneficial to the subject), introjected regulation (based on the feel-

ings of guilt when not performing the behavior), external regulation (when the conduct is carried out for external rewards), and amotivation (lack of motivation). Some studies on physical education have associated the several self-determined types of motivation (intrinsic and identified) with positive outcomes, such as effort, interest, self-esteem, and vitality. By contrast, motives based on external and introjected regulation, as well as on amotivation, are associated with negative outcomes, such as unhappiness and boredom (see Ntoumanis & Standage, 2009).

Self-determination theory outlines three basic psychological needs (competence, autonomy, and relatedness) that must be satisfied to guarantee the functioning and psychological health of individuals (Deci & Ryan, 2000). Competence is related to a level of mastery that the individual feels while performing a task. The concept of autonomy refers to the perceived level of control that the subject has over his or her behavior. Finally, relatedness represents the feeling of acceptance and connection that the subject experiences with other people engaged in the activity. Satisfaction of these needs has been associated with several benefits, including increased self-determined motivation, con-

centration, persistence, positive affect, and well-being (Ntoumanis, 2005; Standage, Duda, & Ntoumanis, 2005). However, these needs may also be thwarted by a hostile environment. This tendency has recently led to the development of the concept of psychological needs thwarting (Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011), which is defined as the negative state experienced by a subject when he or she believes that his or her psychological needs are being actively obstructed through the actions of others. The thwarting of needs thus involves a different construct from that which occurs when the needs are satisfied (Bartholomew, et al., 2011). Thus, some physical education students cannot feel competent when they do not master certain skills; however, other students may feel incompetent because their teacher does not provide opportunities for them to demonstrate their proficiencies. The first case refers to a low satisfaction of the need for competence, while the second case refers to an instance in which this need is thwarted.

The Sport Education Model is premised on offering students an authentic sports experience that has been adapted to the school context (Siedentop, Hastie, & van der Mars, 2011). The model thus draws from a number of specific elements from various sports (preseason phases, competition and final tournaments, stable teams, data recording, and festive events) and integrates them into the physical education class (Siedentop, et al., 2011). According to Vallerand's hierarchical model of motivation (2007), support for basic psychological necessities encourages more self-determined levels of motivation. Hence, the features and performance standards of the Sport Education Model offer students a venue in which stated needs may be supported, which may in turn encourage students to have a more self-determined behavior (Sinelnikov, Hastie, & Prusak, 2007). The model thus focuses on activities that support autonomy (Wallhead, Hagger, & Smith, 2010), in which students are given considerable independence in making decisions on class assignments. In addition, the necessary level of interaction required between students during these activities provides students with opportunities to improve relatedness and socialization skills (Carlson & Hastie, 1997). Previous studies have also shown that perceptions of competence tend to increase among students engaging in this model (MacPhail, Gorely, Kirk, & Kinchin, 2008; Spittle & Byrne, 2009). By contrast, the traditional model of games teaching is based on direct instruction (Metzler, 2011). In this model, decisions are exclusively dictated by the teacher; thus, the basic psychological needs of the individuals could be thwarted by the environment (Balaguer, et al., 2012).

In general terms, studies (see Hastie, et al., 2011; Wallhead & O'Sullivan, 2005) have found positive effects of the Sport Education Model on the personal and social development of students. On the other hand, the traditional model of games teaching is based on high levels of control of pupils' behaviors, which could thwart their feelings of competence, autonomy, and relatedness (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2009). In this line, several studies have found that the traditional model is not associated with the support of basic psychological needs and self-determined motivation in the context of PE (Perlman, 2011; Wallhead & Ntoumanis, 2004). Positive impacts of the Sport Education Model with respect to the fun and enjoyment that the student body experiences have also been shown in several studies (Gutiérrez, García-López, Hastie, & Calderón-Luquín, 2013; Kinchin, Wardle, Roderick, & Sprosen, 2004; MacPhail, et al., 2008; Perlman, 2010; Wallhead & Ntoumanis, 2004). Several works have also indicated that the Sport Education Model may encourage students' intentions to participate in extracurricular sports activities (Wallhead, et al., 2010, 2013). The theory of planned behavior (Ajzen, 1985) indicates that the intention to engage in physical activity best predicts performance of the actual stated behavior (Goudas, Biddle, & Underwood, 1995). As a consequence, the present study also analyzes the impact of the Sport Education Model on student intentions to become physically active.

As noted before, studies that have analyzed motivation related to Sport Education are extensive. However, to increase levels of involvement and student learning, it is necessary to continue expanding knowledge within this field of research (Hastie, et al., 2011). Thus, the present study presents a number of novel features not found in prior studies. First, this study employs a method of analysis that examines motivational regulation types (including the introjected type) separately. Furthermore, an assessment of basic psychological need thwarting is employed. Additionally, through a quasi-experimental study, the influence of the Sport Education Model on the intention to become physically active after the end of compulsory education is analyzed. This study thus aims to understand the impact of Sport Education programming on physical education students with respect to the different types of motivational regulation, thwarting of basic psychological needs, satisfaction-enjoyment, boredom, and the intention to be physically active. Four hypotheses are proposed: (1) students in the Sport Education group will, after the intervention, experience improvements in intrinsic motivation, identified regulation, and the self-determination index, combined with reductions in introjected regulation, extrinsic regulation, and amotivation;

(2) these students will experience less basic psychological need thwarting; (3) satisfaction-enjoyment levels will improve in the Sport Education students, and boredom levels will decrease; and (4) these students will experience an increased intention to be physically active. Also, it is assumed that the students completing traditional PE sessions would demonstrate the same levels of the variables analyzed during both the pre-test and post-test.

## Method

### Participants

The sample was composed of 86 physical education students (49 girls and 37 boys) between 15 and 17 years of age ( $M=15.65$ ;  $SD=.78$ ) attending their fourth year of secondary education at two educational centers in Spain. Four class education groups of students were intentionally selected: the experimental group consisted of two class education groups ( $n=43$ ), and the control group consisted of the other two class education groups ( $n=43$ ). Permission was obtained from the educational centers to conduct the study. All participants and their parents also approved the study by giving their informed consent.

### Design and procedure

The study design was a quasi-experimental one, in which an experimental group, a control group, and their measurements were extracted before and after the intervention. The groups were randomly assigned to each treatment. However, randomized participant assignment was not conducted for the dependent variable (the Sport Education Model and traditional PE model) because the student class groups had already been formed. For this reason, a non-equivalent control group design was used (Campbell & Stanley, 1963), which assumes that the groups may not be similar due to prior class group determination.

The study involved three phases. First, the initial measurements were taken from the two groups. The experimental group then participated in a Sport Education program, while the control group was engaged in the traditional PE sessions. After the intervention program was completed, a post-test measurement was organized for the two groups. Questionnaires were completed in class over an approximate duration of 20 minutes. An external researcher explained the questionnaire instructions to the students and answered questions.

### Intervention program

The intervention program for the experimental group involved a teaching unit on volleyball that consisted of 19 55-minute sessions (two per week in the regular PE schedule) that were structured

based on the Sport Education Model (Siedentop, et al., 2011). In order to offer an authentic sport experience to the students, this model introduces several elements of the sport in the units of PE learning (preseason, regular competition, and final championship; regular teams; final party; etc.). Likewise, Sport Education Model uses different roles of the sports teams and games (referee, coach, player, etc.), which allows the students to live sport experience from different viewpoints. The first seven sessions were used for presenting the model, roles, and strategies for team creation, technical-tactical learning, and competition preparation. The following eight sessions involved regular competitions, with three between-competition sessions reserved for training. The final phase and a festive event were held over the last four sessions. The length of the program was considered suitable following the previous studies (García-López & Gutiérrez, 2013; Hastie & Sinelnikov, 2006). An external researcher ensured the correct application of the model in the experimental group following an observational record sheet (Ko, Wallhead, & Ward, 2006) used in prior research (García-López & Gutiérrez, 2013; Sinelnikov, 2009). The PE teacher who facilitated the intervention program had more than 10 years of experience in the discipline, was formally trained to conduct the program, and met all the indicators listed on the stated record sheet.

Meanwhile, the control group participated in the 19-session teaching unit on volleyball that followed the conventions of the traditional model, which included technical-tactical features that made use of teaching styles based on reproduction (Metzler, 2011). Additionally, the PE teacher who facilitated this control-group program was trained to implement the treatment, and an external researcher analyzed the correct implementation following the Direct Instruction teacher benchmarks (Metzler, 2011). Table 1 shows the principal contents and activities in the lessons of both programs.

### Measures

**Motivational regulation.** The *Questionnaire for Evaluating Motivation in Physical Education* was used (CMEF; Sánchez-Oliva, Leo, Amado, González-Ponce, & García-Calvo, 2012). Motivational regulation was evaluated for the students in PE classes based on the self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2002). The items were preceded by "I participate in physical education classes..." and grouped into five dimensions with four items each: intrinsic motivation (e.g. "because this subject is enjoyable and interesting"), identified regulation (e.g. "because I value the benefits that this subject offers me in terms of my development as a person"), introjected regulation (e.g. "because it is what I should do to feel good"), external regulation (e.g. "because I want my



Table 1. Principal contents and activities by sessions of both programs

Session	Sport Education Model	Traditional Model
1	Introduction and composition of teams. Election of the captain-coach.	Introduction. Play volleyball 6x6.
2	Names of the teams and other roles: fitness trainer. Serve and set.	Set 1x1.
3	Role of the referee. Serve and set.	Set 1x1.
4	Presentation of logos and t-shirts. Set and pass. Tactics.	Set 2x2.
5	Committee of discipline and organization. Pass, set and attack. Tactics.	Set 2x2.
6	Role of statistician. Draw and schedule of the championship. Attack and block. Tactics.	Pass 1x1.
7	Training for the championship.	Pass 1x1.
8	Competition (league).	Pass and set.
9	Training for the championship.	Serve.
10	Competition (league).	Serve.
11	Training for the championship.	Attack and block.
12	Competition (league).	Attack and block.
13	Training for the championship.	Attack tactics 6x6.
14	Competition (league).	Attack tactics 6x6.
15	Competition (league).	Defense tactics 6x6.
16	Competition (semi-final 1)	Defense tactics 6x6.
17	Competition (semi-final 2)	Competition 6x6.
18	Competition (final of the class).	Competition 6x6.
19	Competition (final between classes) and party. Presentation of diplomas and awards.	Competition 6x6.

peers to value what I do”), and amotivation (e.g. “I don’t know. I have the impression that it is useless to continue attending this class”). The responses were structured using a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Following (Vallerand, 2001), the scores of each subscale determined the level of global self-determination motivation of the students through the use of the self-determination index ( $SDI = (2 \times \text{intrinsic motivation}) + \text{identified regulation} - (\text{introjected regulation} + \text{external regulation}) / 2 - 2 \times \text{amotivation}$ ). Sánchez-Oliva et al. (2012) reported adequate reliability and validity of this instrument.

**Psychological need thwarting.** A Spanish version of the *Psychological Need Thwarting Scale* (PNTS; Bartholomew, et al., 2011) was previously developed (Cuevas, Sánchez-Oliva, Bartholomew, Ntoumanis, & Garcia-Calvo, 2015). The scale is composed of the opening header “In my physical education classes...” followed by 12 items (four for each subscale). The subscales evaluated levels of thwarting of autonomy (e.g. “I feel pressured to accept predetermined modes of learning”), competence (e.g. “certain situations make me feel incompetent”), and relatedness (e.g. “I feel I am rejected by those around me”). Responses were given on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Bartholomew, Ntoumanis, Cuevas, and Lonsdale (2014) confirmed adequate levels of reliability and validity for this scale.

**Satisfaction-enjoyment and boredom.** The Spanish adaptation to the PE (Baena-Extremera, Granero-Gallegos, Bracho-Amador, & Pérez-Quero, 2012) of the *Sport Satisfaction Instrument* (SSI; Balaguer, Atienza, Castillo, Moreno, & Duda, 1997; Duda & Nicholls, 1992) was used. The framework was composed of two dimensions: satisfaction-enjoyment, which had five items (e.g. “I usually have fun in physical education classes”), and boredom, which had three items (e.g. “in physical education classes, I usually get bored”). Responses were given on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Baena-Extremera et al. (2012) reported acceptable levels of validity and reliability for this scale.

**Intention to be physically active.** The Spanish version of the *Intention to be Physically Active Scale* (IPAS; Hein, Müür, & Koka, 2004) was used (Moreno, Moreno, & Cervelló, 2007). The scale consisted of five items, preceded by the heading “Regarding your intention to practice sports...”. It assessed the students’ intention to be physically active during their leisure time and after they would have finished high school (e.g. “after completing high school, I want to join a training sports club”). Responses were given on a five-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Moreno et al. (2007) reported adequate rates of validity and reliability for this instrument.

## Analysis of data

Once missing data were excluded, calculations were performed using the IBM-SPSS 19.0 software. Scale reliability was obtained for the pre- and post-test using Cronbach's alpha, and mean, comparisons of means, and standard deviation values were calculated. Following the previous studies with a similar design (Papaioannou, Evaggelidou, Barkoukis, & Block, 2013; Perlman, 2010; Wallhead & Ntoumanis, 2004), to analyze the significance of changes found after the program was implemented, repeated measures analysis of variance (ANOVA) calculations were performed for every dependent variable. Time was assigned as an intra-subjects variable (pre- and post-test), and the membership to a group (experimental and control) was used as an inter-subjects variable. Bonferroni's correction, which, for this study, sets a significance level at  $p \leq .0125$  for the comparison of the four measurements of analysis, was used to interpret the analysis results. The effect size was also determined for

each variable using the partial eta-squared. Levine and Hullett (2002) emphasized the utility of calculating and reporting these data when comparing groups, especially when groups consist of a small number of individuals.

## Results

Table 2 shows Cronbach's alpha as well as mean and standard deviation values demonstrating acceptable reliability for all the variables measured (Hair, Anderson, Tatham, & Black, 1998). The differences between the means of all the variables for both groups were significant in the pre-test, which confirmed the nonequivalence of the groups.

Regarding the interaction effects (time x group) of the 2x2 ANOVA (Table 3), the significant changes were found for intrinsic motivation, revealing that the Sport Education program caused substantial improvements in this variable ( $p = .011$ ) for the participants in EG. Improvements in intrinsic motivation were also confirmed with a consid-

Table 2. Means, standard deviations and Cronbach's alphas of the pre- and post-test measures in the experimental and control group

	Pre-test					Post-test				
	$\alpha$	Experimental		Control		$\alpha$	Experimental		Control	
		M	SD	M	SD		M	SD	M	SD
Intrinsic motivation	.85	4.15	.80	3.37	.91	.81	4.45	.49	3.01	.87
Identified regulation	.79	3.63	.82	2.95	.95	.81	4.10	.71	2.86	.92
Introjected regulation	.75	3.07	.93	2.61	.81	.74	3.22	1.10	2.83	.98
External regulation	.74	3.27	.86	2.65	.79	.80	3.42	1.07	2.93	.83
Amotivation	.72	1.44	.69	2.37	1.08	.86	1.50	.93	2.56	.91
Self-determination Index	.74	5.88	3.38	2.31	4.11	.81	6.69	2.97	.84	4.15
Thwarting competence	.75	1.92	.93	2.52	.82	.76	1.81	.85	2.86	.81
Thwarting autonomy	.73	2.11	.89	2.79	.83	.73	2.07	.96	2.98	.86
Thwarting relatedness	.77	1.70	.83	2.23	.85	.76	1.72	.87	2.73	1.01
Satisfaction-enjoy	.84	4.26	.81	3.49	.89	.86	4.57	.47	3.25	.92
Boredom	.70	1.98	.74	2.64	.91	.78	1.83	1.02	2.96	.96
Intention	.82	4.09	.96	3.58	.98	.77	4.23	.88	3.39	.90

Table 3. Time effects and interaction of time and group effects in 2x2 ANOVA

	Time			Time * group		
	F	p	$\eta^2$	F	p	$\eta^2$
Intrinsic motivation	.063	.803	.001	6.850	.011	.075
Identified regulation	1.48	.147	.025	5.020	.028	.056
Introjected regulation	1.774	.190	.001	.76	.784	.001
External regulation	2.481	.119	.029	.261	.611	.003
Amotivation	.724	.397	.009	.207	.650	.002
Self-determination Index	.366	.547	.004	4.421	.038	.050
Thwarting competence	.445	.418	.008	1.832	.102	.031
Thwarting autonomy	.001	.981	.000	.92	.763	.001
Thwarting relatedness	4.084	.046	.046	3.236	.076	.037
Satisfaction-enjoy	.054	.816	.001	4.410	.039	.050
Boredom	.763	.385	.009	1.521	.221	.018
Intention	.29	.886	.061	1.258	.265	.015

erable effect size ( $\eta^2_{\text{partial}}=.075$ ). Although changes were not found to be significant for the other variables, slight improvements in the self-determination index ( $\eta^2_{\text{partial}}=.050$ ) and identified regulation ( $\eta^2_{\text{partial}}=.056$ ) were noteworthy in the experimental group. Small changes were also observed in the satisfaction-enjoyment ( $\eta^2_{\text{partial}}=.050$ ) and need thwarting of competence ( $\eta^2_{\text{partial}}=.031$ ) variables.

## Discussion and conclusions

The present study analyzed the impact of a Sport Education program on different forms of motivational regulation with respect to basic psychological need thwarting, satisfaction-enjoyment, boredom, and the intention to be physically active among PE students from the perspective of the self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2002). Although all the hypotheses could not be confirmed, the intervention program generally had a positive influence on the student body. Regarding the first hypothesis, only intrinsic motivation improved significantly. The increase in this form of motivation indicates that the Sport Education Model, in line with the assertions of Sinelnikov et al. (2007), promotes pleasure and well-being in PE classes. This finding is of special importance because intrinsic motivation is associated with higher levels of effort and interest among students (Ntoumanis & Standage, 2009), which may also promote stronger learning and academic performance outcomes. Similar trends have previously been noted by MacPhail et al. (2008), whose research subjects became engaged in Sport Education classes despite not being accustomed to such formats through their previous participation in traditional PE classes. On this issue, it is important to highlight that students generally demonstrate higher degrees of effort in classes using the Sport Education Model (Wallhead & Noutmanis, 2004; Gutiérrez, et al., 2013). Although not significant, the experiment also caused slight improvements in the self-determination index and identified regulation in the experimental group. These data suggest that use of the Sport Education Model may encourage emergence of a more self-determined motivation.

Because no significant changes were found, the second hypothesis based on the thwarting of basic psychological needs was not confirmed. However, a slight decrease in competence frustration levels that occurred among the students in the Sport Education group should be taken into account. The effect size indicates that this model offers a suitable context to students for demonstrating their skills and effectiveness in completing class assignments. However, these data cannot be directly compared because no previous studies have analyzed psychological-need thwarting levels among students participating in the Sport Education Model. Nevertheless, these results complement those of other studies that have noted

improvements in perceived competence among the students participating in this model (Gutiérrez, et al., 2013; MacPhail, et al., 2008; Spittle & Byrne, 2009). This phenomenon may be attributed to students' tendency to improve their tactical domain (Browne, Carlson, & Hastie, 2004; Clarke & Quill, 2003), their performance (Hastie, 1998; Hastie & Trost, 2002; Hastie, Sinelnikov, & Guarino, 2009; Pritchard, Hawkins, Wiegand, & Metzler, 2008), and their perceived learning levels under the Sport Education model (Browne, et al., 2004).

Because no significant changes in satisfaction-enjoyment and boredom levels were identified, the third hypothesis was not confirmed. However, it is interesting to note that satisfaction-enjoyment, a construct that is closely linked to intrinsic motivation, improved in the experimental group with a moderate effect size. These results complement those of previous works (Gutiérrez, et al., 2013; Hastie & Sinelnikov, 2006; Kinchin, et al., 2004; MacPhail, et al., 2008; Perlman, 2010) that noted higher levels of enjoyment among students in Sport Education classes. Hence, it should be noted that this model favors a more active participation and shorter periods of waiting between class assignments (Vidoni & Ward, 2009), which may also increase a sense of fun within the student body.

With respect to students' intentions to become physically active, we found a slight and non-significant increase with a modest effect size after the intervention. Although intrinsic motivation (a variable that improved significantly in this study) is one of the main predictors of the intention to become physically active (Cuevas, Contreras, Fernández, & González-Martí, 2014; Hein, et al., 2004), the intention to practice sports is not substantially affected by the model in this study. These data diverge from those of other studies (Wallhead, Garn, & Vidoni, 2013; Wallhead, et al., 2010), highlighting the potential of Sport Education for increasing not only motivation levels but also participation in sports activities outside of school settings.

From the data generated in this study, a number of theoretical and practical implications can be identified. From a theoretical perspective, the utility of separately analyzing different forms of motivational regulation in generating more precise information on student behaviors in class must be emphasized. Additionally, although significant changes were not found, it is useful to experimentally examine behaviors arising from the thwarting of basic needs, given that this is a recently developed psychological construct. On a practical level, the results suggest the suitability of the Sport Education Model in PE classes because of its positive impact on intrinsic motivation. Significant improvements in intrinsic motivation spur an interest in sports activities even after the initial goals have been achieved (Moreno & Martínez, 2006). Thus, higher levels of self-



determined motivation facilitate higher degrees of sports practice and learning in students.

Despite effectively elucidating these findings, the present study exhibits a number of limitations. The sample size, method of sample selection, and intervention duration warrant caution regarding the generalization of conclusions. Consequently, it would be beneficial to plan quasi-experimental studies over longer periods of time including more participants to obtain more conclusive results. A study of longer duration may confirm or contradict fluctuating trends exhibited by certain variables in this study, such as improvements in satisfaction-enjoyment and the intention to be physically active, as well as reductions in the thwarting of the need of competence. Also, in the present study we used a non-equivalent control group design, which can make difficult to analyze the effects of the treatment. Hence, it will be desirable to use equivalent control group in future studies in order to clarify the analysis. Furthermore, the results generate new

questions to be resolved in the field of Sport Education, such as the influence of the model on basic psychological needs. As we have demonstrated, this model is based on an approach that is centered on principles of autonomy (Wallhead, et al., 2010) and socialization (Carlson & Hastie, 1997). However, the perceptions of the thwarting of autonomy and relatedness did not change through the application of the Sport Education program. This finding may be attributable to the fact that the personal autonomy of certain students may be restricted by the decision-making process applied in each team. Similarly, through the application of group work, the model provides considerable social interaction opportunities to team members; however, these opportunities may be reduced considerably by other classmates who are members of the opposing teams. Improved understanding of these issues will certainly result in more effective educational applications of the Sport Education Model.

## References

- Ajzen, I. (1985). From intention to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behaviour* (pp. 11-39). Heidelberg: Springer.
- Baena-Extremera, A., Granero-Gallegos, A., Bracho-Amador, C., & Pérez-Quero, F.J. (2012). Spanish version of the Sport Satisfaction Instrument (SSI) adapted to Physical Education. *Revista de Psicodidáctica*, 17(2), 377-395.
- Balaguer, I., Atienza, F. L., Castillo, I., Moreno, Y., & Duda, J.L. (1997). Factorial structure of measures of satisfaction/interest in sport and classroom in the case of Spanish adolescents. In *Abstracts of 4<sup>th</sup> European Conference of Psychological Assessment* (p. 76). Lisbon: Portugal.
- Balaguer, I., González, L., Fabra, P., Castillo, I., Mercé, J., & Duda, J.L. (2012). Coaches' interpersonal style, basic psychological needs and the well- and ill-being of young soccer players: A longitudinal analysis. *Journal of Sports Sciences*, 30(15), 1619-1629. doi: 10.1080/02640414.2012.731517
- Bartholomew, K.J., Ntoumanis, N., Cuevas, R., & Lonsdale, C. (2014). Job pressure and ill-health in Physical Education teachers: The mediating role of psychological need thwarting. *Teaching and Teacher Education*, 37, 101-107. doi: 10.1016/j.tate.2013.10.006
- Bartholomew, K.J., Ntoumanis, N., Ryan, R.M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology*, 33, 75-102.
- Bartholomew, K.J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2009). A review of controlling motivational strategies from a self-determination theory perspective: Implications for sports coaches. *International Review of Sport and Exercise Psychology*, 2(2), 215-233. doi: 10.1080/17509840903235330
- Browne, T.B.J., Carlson, T.B., & Hastie, P.A. (2004). A comparison of rugby seasons presented in traditional and sport education formats. *European Physical Education Review*, 10(2), 192-214. doi: 10.1177/1356336X04044071
- Campbell, D.T., & Stanley, J.C. (1963). Experimental and quasi-experimental designs for research. Reprinted from N.L. Gage (Ed.), *Handbook of research on teaching*. Boston: Rand McNally.
- Carlson, T.B., & Hastie, P. (1997). The student social system within sport education. *Journal of Teaching in Physical Education*, 16(2), 176-195.
- Clarke, G., & Quill, M. (2003). Researching sport education in action: A case study. *European Physical Education Review*, 9(3), 253-266. doi: 10.1177/1356336X030093004
- Cuevas, R., Contreras, O., Fernández, J.G., & González-Martí, I. (2014). Influencia de la motivación y el autoconcepto físico sobre la intención de ser físicamente activo. [Influence of motivation and physical self-concept on the intention to be physically active. In Spanish.] *Revista Mexicana de Psicología*, 31(1), 17-24.
- Cuevas, R., Sanchez-Oliva, D., Bartholomew, K.J., Ntoumanis, N., & Garcia-Calvo, T. (2015). Adaptation and validation of the Psychological Need Thwarting Scale in Spanish Physical Education teachers. *The Spanish Journal of Psychology*, 18, 1-9.

- Deci, E.L., & Ryan, R.M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Academic Press.
- Deci, E.L., & Ryan, R.M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227-268. doi: 10.1207/S15327965PLI1104\_01
- Duda, J.L., & Nicholls, J.G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology*, 84(3), 290-299. doi: 10.1037//0022-0663.84.3.290
- García López, L.M., & Gutiérrez, D. (2015). The effects of a sport education season on empathy and assertiveness. *Physical Education & Sport Pedagogy*, 20, 1-16. doi: 10.1080/17408989.2013.780592.
- Goudas, M., Biddle, S.J.H., & Underwood, M. (1995). It ain't what you do, it's the way that you do it! Teaching style affects children's motivation in track and field lessons. *The Sport Psychologist*, 9, 254-264.
- Gutiérrez, D., García López, L.M., Hastie, P.A., & Calderón Luquín, A. (2013). The responses of Spanish students to participation in seasons of sport education. *The Global Journal of Health and Physical Education Pedagogy*, 2(2), 111-127.
- Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1998). *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.
- Hastie, P.A. (1998). Skill and tactical development during a sport education season. *Research Quarterly for Exercise & Sport*, 69(4), 368-379. doi: 10.1080/02701367.1998.10607711
- Hastie, P.A., Martínez de Ojeda, D., & Calderón Luquín, A. (2011). A review of research on Sport Education: 2004 to the present. *Physical Education & Sport Pedagogy*, 16(2), 103-132.
- Hastie, P.A., & Sinelnikov, O.A. (2006). Russian students' participation in and perceptions of a season of sport education. *European Physical Education Review* 12(2), 131-150. doi: 10.1177/1356336X06065166
- Hastie, P.A., Sinelnikov, O.A., & Guarino, A.J. (2009). The development of skill and tactical competencies during a season of badminton. *European Journal of Sport Science*, 9(3), 133-140. doi: 10.1080/17461390802542564
- Hastie, P.A., & Trost, S.G. (2002). Student physical activity levels during a Sport Education season. *Pediatric Exercise Science*, 14, 64-74.
- Hein, V., Mürer, M., & Koka, A. (2004). Intention to be physically active after school graduation and its relationship to three types of intrinsic motivation. *European Physical Education Review*, 10, 5-19.
- Kinchin, G.D., Wardle, C., Roderick, S., & Sprosen, A. (2004). A survey of 9-year boys' perceptions of sport education in one English secondary school. *Bulletin of Physical Education* 40(1), 27-40.
- Ko, B., Wallhead, T., & Ward, P. (2006). Chapter 4: Professional Development Workshops – What do teachers learn and use? *Journal of Teaching in Physical Education*, 25(4), 397-412.
- Levine, T.R., & Hullett, C.R. (2002). Eta squared, partial eta squared, and misreporting of effect size in communication research. *Human Communication Research*, 28(4), 612-625. doi: 10.1093/hcr/28.4.612
- MacPhail, A., Gorely, T., Kirk, D., & Kinchin, G. (2008). Children's experiences of fun and enjoyment during a season of sport education. *Research Quarterly for Exercise and Sport*, 79(3) 344-355. doi: 10.1080/02701367.2008.10599498
- Metzler, M. (2011). *Instructional models for physical education*. Scottsdale, AZ: Holocomb Hathaway.
- Moreno, J.A., & Martínez, A. (2006). Importancia de la teoría de la Autodeterminación en la práctica físico-deportiva: fundamentos e implicaciones prácticas. [Importance of self-determination theory in the practice of physical activity. In Spanish.] *Cuadernos de Psicología del Deporte*, 6, 39-52.
- Moreno, J.A., Moreno, R., & Cervelló, E. (2007). El autoconcepto físico como predictor de la intención de ser físicamente activo. [The physical self-concept as predictor of the intention to be physically active. In Spanish.] *Psicología y Salud*, 17, 261-267.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology*, 97, 444-453.
- Ntoumanis, N., & Standage, M. (2009). Motivation in physical education classes: A self-determination theory perspective. *Theory and Research in Education*, 7, 194-202. doi: 10.1177/1477878509104324
- Papaioannou, C., Evaggelinou, C., Barkoukis, V., & Block, M. (2013). Disability awareness program in a summer camp. *European Journal of Adapted Physical Activity*, 6(2), 19-28.
- Perlman, D.J. (2010). Change in affect and needs satisfaction for amotivated students within the sport education model. *Journal of Teaching in Physical Education*, 29(4), 433-445.
- Perlman, D.J. (2011). Examination of self-determination within the sport education model. *Asia-Pacific Journal of Health, Sport and Physical Education*, 2, 79-92. doi: 10.1080/18377122.2011.9730345
- Pritchard, T., Hawkins, A., Wiegand, R., & Metzler, J.N. (2008). Effects of two instructional approaches on skill development, knowledge, and game performance. *Measurement in Physical Education & Exercise Science*, 12(4), 219-236.
- Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Ryan, R.M., & Deci, E.L. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E.L. Deci & R.M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-33). Rochester, NY: University of Rochester Press.



- Sánchez-Oliva, D., Leo, F.M., Amado, D., González-Ponce, I., & García-Calvo, T. (2012). Desarrollo de un cuestionario para valorar la Motivación en Educación Física. [Development of a questionnaire for measuring the motivation in physical education. In Spanish.] *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 7(2), 227-250.
- Siedentop, D. (1994). *Sport education: Quality PE through positive sport experiences*. Champaign, IL: Human Kinetics.
- Siedentop, D., Hastie, P.A., & van der Mars, H. (2011). *Complete guide to sport education*. Champaign, IL: Human Kinetics.
- Sinelnikov, O.A. (2009). Sport education for teachers: Professional development when introducing a novel curriculum model. *European Physical Education Review*, 15(1), 91-114.
- Sinelnikov, O., Hastie, P. & Prusak, K. (2007). Situational motivation in a season of sport education. *ICHPER-SD Research Journal*, 2, 43-47.
- Spittle, M., & Byrne, K. (2009). The influence of sport education on student motivation in physical education. *Physical Education and Sport Pedagogy*, 14(3), 253-266. doi: 10.1080/17408980801995239
- Standage, M., Duda, J.L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, 75, 411-433. doi: 10.1348/000709904X22359
- Vallerand, R.J. (2001). A hierarchical model of intrinsic and extrinsic motivation for sport and exercise. In G.C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 263-319). Champaign, IL: Human Kinetics.
- Vallerand, R.J. (2007). A hierarchical model of intrinsic and extrinsic motivation for sport and physical activity. In M.S. Hagger & L.D. Chatzisarantis (Eds.), *Intrinsic motivation and self-determination in exercise and sport* (pp. 255-279). Champaign, IL: Human Kinetics.
- Vidoni, C., & Ward, P. (2009). Effects of fair play instruction on student social skills during a middle school sport education unit. *Physical Education and Sport Pedagogy*, 14(3), 285-310. doi: 10.1080/17408980802225818
- Wallhead, T.L., Garn, A.C., & Vidoni, C. (2013). Sport Education and social goals in physical education: Relationships with enjoyment, relatedness, and leisure-time physical activity. *Physical Education and Sport Pedagogy*, 18(4), 427-441. doi:10.1080/17408989.2012.690377
- Wallhead, T.L., Hagger, M., & Smith, D. (2010). Sport education and extra-curricular sport participation: An examination using the trans-contextual model of motivation. *Research Quarterly for Exercise and Sport*, 81, 442-455. doi: 10.1080/02701367.2010.10599705
- Wallhead, T.L., & Ntoumanis, N. (2004). Effects of a sport education intervention on students' motivational responses in physical education. *Journal of Teaching in Physical Education*, 23, 4-18.
- Wallhead, T.L., & O'Sullivan, M. (2005). Sport Education: Physical education for the new millennium? *Physical Education & Sport Pedagogy*, 10(2), 181-210. doi:10.1080/17408980500105098

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