



Gender and corporal expression activity in physical education: Effect of an intervention on students' motivational processes

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Abstract:	<p>Grounded in Self-Determination Theory and Achievement Goal Theory, the objective was to assess the effectiveness of an intervention programme on a series of motivational variables in a corporal expression teaching unit. An analysis was also conducted in terms of whether the impact of the intervention would be effective in boys and girls, given the social stereotypes inherent to this type of expression activity. A sample of 224 students, with ages varying from 12 to 14 years old (105 boys, 119 girls) participated in 10 sessions. A quasi-experimental design was carried out, dividing the total sample into two groups, control (n = 115) and experimental (n = 109). The intervention programme was applied in the experimental group via specific strategies based on the TARGET areas. In the experimental group, the results showed significantly higher values in perceived task-oriented climate, autonomy, competence, intrinsic motivation, identified regulation and enjoyment, as well as significantly lower values in ego-oriented climate. The intervention programme proved to be effective in boys and girls and the results were even better in boys. The importance of developing and applying specific motivational strategies in corporal expression activities should be stressed in order for this to have an impact on variables such as motivation and enjoyment in boys and girls, thus achieving more positive experiences.</p>

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9 1 **Gender and corporal expression activity in physical education: Effect of an**
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11 2 **intervention on students' motivational processes**
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9 **1 Abstract**

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14 4 variables in a corporal expression teaching unit. An analysis was also conducted in
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1 **Keywords**

2 Motivational climate, basic psychological needs, self-determined motivation,
3 enjoyment, teaching intervention

For Peer Review

Introduction

Physical inactivity has become one of the main global public health issues over the last few decades (Pratt et al., 2014). As a result of this situation, a large number of initiatives and physical activity (PA) programmes have emerged, trying to raise awareness and mobilise all sectors of the population (Belton et al., 2014; Naylor et al., 2015). Physical Education (PE), as a compulsory subject that plays an important role in promoting PA, aims to foster school and out-of-school PA-sport engagement (Sallis et al., 2012). This work seems to be essential from the educational perspective given the existing connection between healthy habits, developed at early ages, and the lifestyle adopted throughout adulthood (Herman et al., 2009).

However, current levels of moderate-to-vigorous PA (MVPA) continue to be low in children and adolescents, especially in females (Hallal et al., 2012). Authors such as Sallis et al. (2012) suggest implementing healthy policies and intervention studies based on scientific evidence to help to qualitatively and quantitatively improve engagement levels in MVPA inside and outside PE classes. Thus, due to the existing limitation in the number of hours dedicated to the PE subject, adherence to PA and its promotion are considered to be some of the priority objectives of this subject (Dauenhauer and Keating, 2011). This question becomes particularly important in females. Different studies show that a high percentage of girls do not have gratifying experiences in PE

1 classes, thus giving rise to low levels of MVPA (Mitchell et al., 2013; Murillo et al.,
2 2014).

3 Over the last few years, Self-Determination Theory (SDT) (Ryan and Deci, 2000) and
4 Achievement Goal Theory (AGT) (Nicholls, 1989) have appeared in the PE context as
5 two social cognitive theories that explain the functioning of motivational processes.
6 This research study makes it possible to specifically address the existing relationship of
7 motivational variables in these two theories through the Hierarchical Model of Intrinsic
8 and Extrinsic Motivation sequence (Vallerand, 2007).

9 A substantial body of research grounded in AGT (Nicholls, 1989) points out that the
10 motivational climate perceived by pupils in PE classes may be very useful to generate
11 more positive and adaptive cognitive, affective and behavioural consequences in
12 students. Based on previous studies within the PE context (see Braithwaite et al., 2011
13 for a review), it seems important for teachers to intervene in order to generate a task-
14 oriented climate (i.e. inter-individual progress, personal effort and self-improvement are
15 evaluated), moving away from the ego-oriented climate (i.e. social comparison among
16 classmates is evaluated) (Harwood et al., 2008). Therefore, in a task-oriented climate,
17 all students will probably feel competent in terms of their physical abilities and
18 achievements, where effort brings rewards. In contrast, in an ego-oriented climate only
19 students who perceive that their skills are better than those of their peers could feel
20 more satisfied and competent. According to AGT, PE teachers should create a mastery

1 climate by means of the TARGET framework (Ames, 1992). The initials of the six
2 dimensions that form the acronym TARGET refer to:

- 3 • Task (design of activities and objectives adapted to their specific needs and
4 level).
- 5 • Authority (create opportunities for decision-making).
- 6 • Recognition (distribution of positive feedback and rewards), grouping (student
7 learning groups are varied and heterogeneous).
- 8 • Evaluation (criteria focused on the process and effort).
- 9 • Time (appropriateness and relevance of the child's own learning priorities and
10 pacing).

11 Similarly, SDT (Ryan and Deci, 2000) indicates that social factors in PE classes (e.g.
12 motivational climate generated by the teacher, from AGT) may have an impact on
13 students' motivational processes. In this regard, an interpersonal teaching style may
14 facilitate satisfaction of the three basic psychological needs (BPN) (i.e. autonomy,
15 competence and relatedness) (Deci and Ryan, 2000). Autonomy refers to the students'
16 need to perceive a sense of freedom in their own actions when they participate in the
17 learning process (Deci and Ryan, 2000). The need for competence refers to a sense of
18 being effective or feeling successful in different activities (Deci and Ryan, 2000). The
19 need for relatedness involves the experience of feeling connected and integrated with
20 others (Deci and Ryan, 2000). More specifically, high levels of BPN are associated with

1 more self-determined forms of motivation (i.e. intrinsic motivation, integrated
2 regulation and identified regulation) (Sánchez-Oliva et al., 2014). Consequently, along
3 this continuum, SDT distinguishes between intrinsic motivation (i.e. engaging in an
4 activity for the inherent feeling of pleasure and satisfaction derived from participating in
5 it), integrated regulation (i.e. doing an activity because it is integrated into one's own
6 lifestyle, providing coherence with one's other values and beliefs) (Deci and Ryan, 2000),
7 and identified regulation (i.e. engaging in an activity because of the relevance and the
8 outcomes associated with it) (Deci and Ryan, 2000). In the specific context of PE,
9 findings have demonstrated that nurturing students' BPN predicts self-determined forms
10 of motivation and consequently, positive affective, cognitive and behavioural
11 consequences, such as enjoyment, effort and academic performance (Gråstén et al.,
12 2012; Ntoumanis and Standage, 2009).

13 However, a more controlling teaching style may frustrate these BPN, associated with
14 less self-determined forms of motivation (i.e. introjected regulation, external regulation
15 and amotivation) (Haerens et al., 2015). According to SDT, introjected regulation (i.e.
16 engaging in an activity to reduce or avoid feelings of sense of guilt) (Deci and Ryan,
17 2000) and external regulation (i.e. doing an activity to get a reward) (Deci and Ryan,
18 2000) represent the two forms of controlled motivation. Finally, amotivation represents
19 the least self-determined motivation, as there is a lack of intrinsic and extrinsic
20 motivation to do an activity (Deci and Ryan, 2000).

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9 1 Consistent with SDT, AGT proposes that a perceived task-oriented climate initiated by
10 2 the PE teacher may help to satisfy the BPN (e.g. Méndez-Giménez et al., 2013), to
11 3 develop more self-determined forms of motivation (e.g. Barkoukis and Hagger, 2013),
12 4 enjoyment (e.g. Gråstén et al., 2012), or the intention to be physically active and carry
13 5 out leisure-time PA (e.g. Cecchini et al., 2014). More specifically, recent studies have
14 6 revealed that, in females, perceived motivational climate has an influence on perceived
15 7 competence (Garn et al., 2013) and “it is in fact one of the most influential variables for
16 8 engaging in PA” (Smart et al., 2012). Moreover, there is sufficient evidence in the PE
17 9 context to indicate that the manipulation of different structures of the TARGET areas
18 10 (i.e. task, authority, recognition, grouping, evaluation and time) (Ames, 1992), is very
19 11 effective in developing a greater perceived task-oriented climate. This generates higher
20 12 levels of autonomous motivation (González-Cutre et al., 2011), perceived competence
21 13 (Barkoukis et al., 2008), perceived autonomy and perceived effort (Wallhead and
22 14 Ntoumanis, 2004), enjoyment (Viciano et al., 2007), self-efficacy and skill development
23 15 (Barkoukis et al., 2010) and intentions to be physically active (Cecchini et al., 2014).
24 16 However, a recent meta-analysis, involving 22 PE intervention studies (Braithwaite et
25 17 al., 2011), shows that the time periods (e.g. from one day to seven seven months), the
26 18 activity to develop this type of intervention (e.g. football, basketball, hockey,
27 19 volleyball) and the components (e.g. several or all TARGET areas) differ significantly
28 20 from one study to another. Taking these considerations into account, there are few
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1 studies that have explored the effects of manipulating the motivational climate in the
2 corporal expression content area (i.e. this is a type of expressive and aesthetic activity
3 that focuses on physical behaviours, whose aim is to communicate ideas, feelings and
4 sensations), based on all TARGET dimensions throughout 10 sessions. According to
5 different intervention studies, TARGET could be effective in short periods of time
6 (Cecchini et al., 2001; Weigand and Burnton, 2002). More specifically, the
7 development of specific strategies for each content area integrated into the PE teacher's
8 curricular programme seems to be essential in order to configure an optimal
9 motivational climate (Braithwaite et al., 2011).

10 Consistent with the conceptual framework of the study, Vallerand's Hierarchical Model
11 of Intrinsic and Extrinsic Motivation (2007) proposed that teaching interventions in PE
12 classes may have a great influence on students' experiences, autonomous motivation
13 and positive consequences (Sánchez-Oliva et al., 2014). This proposal must be taken
14 into account because repeated motivational and positive outcomes at a situational level
15 (i.e. task, class or unit in PE) may impact the next level up (i.e. contextual level), such
16 as the PE subject or leisure-time PA (González-Cutre et al., 2014b).

17 Moreover, many researchers emphasise that female students are a subgroup that warrant
18 special attention. Girls' disengagement is a topical issue studied in PE research
19 (Camacho-Miñano et al., 2011). A substantial body of research points out that females
20 present barriers to engaging in PA (e.g. less self-determined type of motivation, less

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9 1 perceived competence and support to autonomy, lack of predisposition to some content
10 2 areas), which, in some cases, limit their participation in PE classes and their adherence
11 3 to PA (Enright and O'Sullivan, 2012; Inchley et al., 2011). A recent study by Baena-
12 4 Extremera et al. (2012) points out that boys experience higher levels of self-determined
13 5 motivation and enjoyment than girls in PE classes. Therefore, psychological variables
14 6 seem to be decisive in improving students' behavioural aspects and in developing more
15 7 positive and adaptive experiences in the school and out-of-school environment (Van den
16 8 Berghe et al., 2014; Zook et al., 2014).

17 9 Likewise, the reasons for engaging in PE, as well as preferences and interests seem to
18 10 differ between boys and girls (Leversen et al., 2012). Authors such as Ruiz et al. (2010)
19 11 point out that in secondary education, boys normally prefer more competitive activities,
20 12 typical of invasion sports (e.g. football, basketball, handball), while girls are more
21 13 inclined towards cooperative activities (e.g. collaborative tasks, corporal expression
22 14 activities), where the result is not the main objective of the game. However, these types
23 15 of corporal expression activities do not feature frequently in the teaching programmes of
24 16 many PE teachers (Robles et al., 2013). It is one of the least valued content areas in PE
25 17 (Matanin and Collier, 2003). In this sense, and given the many content area related
26 18 teaching problems (Sebire et al., 2013), many authors (e.g. Amado et al., 2014; Brooke
27 19 et al., 2014) request teaching resources and proposals to adhere students to this type of
28 20 activities, in an attempt to achieve more positive experiences.

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9 1 Although previous findings indicate that a motivational climate could be positively
10 2 related to the need for satisfaction in PE (Ullrich-French and Cox, 2014) and in the
11 3 sport context (Álvarez et al., 2012), this study aims to extend these findings by
12 4 investigating whether the positive effects of manipulating the task-oriented climate can
13 5 nurture students' BPN. Linking AGT and SDT, the current study suggests that a
14 6 motivational task climate focused on intra-individual progress and effort can influence
15 7 the students' personal sense of freedom and control of this learning process (autonomy
16 8 satisfaction). Moreover, a task-oriented climate may generate a different way of looking
17 9 at the learning process, taking interest in each student's progress (competence
18 10 satisfaction) and encouraging cooperation among students because competition is not
19 11 the main purpose of the learning process (relatedness satisfaction).

22 12 Previous research shows that no quasi-experimental studies have examined the effects
23 13 of manipulating the task-oriented climate using strategies associated with the TARGET
24 14 areas, taking into account the gender of the sample, and in the corporal expression
25 15 content area. As suggested by Braithwaite et al. (2011) in a recent meta-analysis, it
26 16 seems advisable to evaluate if the intervention has been effective in both girls and boys,
27 17 given that they expressed different preferences and interests in PE classes. Thus, the
28 18 study had two objectives: 1) To assess the impact of an intervention programme in a
29 19 corporal expression unit, focused on skipping rope activities, on a series of motivational
30 20 variables and affective consequences; 2) To analyse if gender could be an influential

1 variable on the effectiveness of the intervention. The first hypothesis stated that the
2 strategies developed in the intervention programme, based on the TARGET areas,
3 would generate a greater task-oriented climate and consequently greater satisfaction of
4 the BPN, greater self-determined regulation and greater enjoyment in the experimental
5 group. The second hypothesis postulated that the intervention programme would be
6 equally effective in boys and girls of the experimental group.

8 **Methods**

9 *Research design*

10 The research was carried out within the PE educational context, under a quasi-
11 experimental design and with a non-equivalent control group (Campbell and Stanley
12 1966). Four classes were randomly assigned to the control group and four to the
13 experimental group. The class groups were already established by the school at the start
14 of the school year following standard criteria for testing homogeneity: age, gender, class
15 size, academic performance, and students with special needs.

16 Both the control and experimental groups conducted a corporal expression unit
17 comprised of skipping rope activities that lasted for 10 sessions. The skipping rope
18 activities were geared towards corporal expression because the final goal of the unit was
19 to design and implement a choreographic sequence with skipping ropes, by way of body
20 movement. Only the experimental group applied the TARGET programme strategies.

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9 1 Considering the content area, there are several reasons for choosing this content area.
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11 2 Firstly, and to our knowledge, this is the first study in educational literature that has
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13 3 tested the effectiveness of TARGET on motivation-related variables in terms of the
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15 4 skipping rope activity. Previous studies (e.g. Ha et al., 2006; Ha et al., 2014) proposed a
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17 5 school-based skipping rope intervention design to increase MVPA in school PE lessons.
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19 6 Secondly, in Spain, it is complicated for PE teachers to design and develop corporal
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21 7 expression activities due to their lack of knowledge and experience (Robles et al.,
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23 8 2013). More specifically, the two teachers who participated in the study hardly ever
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25 9 used this type of content area in their curricular programme. Thirdly, the students had
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27 10 no experience in skipping rope activities in PE lessons, thus no pre-test to check
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29 11 homogeneity of variances was required. During the first session, it was verified that
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31 12 none of the pupils had procedural knowledge of this activity (e.g. principle of jumping
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33 13 inside the rope) or previous experiences in PE related to this content area in the school
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35 14 area.
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40 15 Finally, skipping rope is one of the school activities that is more highly susceptible to
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42 16 drop-out (Brooke et al., 2014). Historically, engaging in this activity has been attributed
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44 17 to girls (Henshaw et al., 1992). Interventions, therefore, are conceived to be very
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46 18 important in the corporal expression content area to create positive experiences from
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48 19 early stages that may increase students' motivation and foster their predisposition to
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50 20 engage in this activity in other contexts.
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9 1 *Participants and settings*

10 2 A total of 224 students participated out of an initial sample of 233 first year secondary
11 3 education students, from the same high school. Originally, students came from the same
12 4 state school before entering the high school. Their ages varied between 12 and 14 (M
13 5 age = 12.37, $SD = 0.64$) and there were 105 boys and 119 girls. The number of students
14 6 in the eight classes ranged from 25 to 30 students. The student selection inclusion
15 7 criteria were compliance with all the instruments relating to the study variables and
16 8 attendance at 10 sessions. Nine students were eliminated from the final sample: four of
17 9 them due to invalidated questionnaires, two were injured and three did not attend all the
18 10 lessons. The experimental group ($n = 109$) was comprised of four classes (51 boys and
19 11 58 girls), and the control group ($n = 115$) was made up of another four classes (54 boys
20 12 and 61 girls). The units were taught by two different PE teachers (one male and one
21 13 female), with degrees in Sport and Exercise Science from the same university, and with
22 14 more than two years' teaching experience at the high school. Before starting the study,
23 15 neither of the PE teachers had any knowledge of the theories and motivational
24 16 strategies. The Ethics Committee of the University, the management team and the
25 17 school's PE department approved the development of the study. As all the students were
26 18 under age, their parents or tutors had to authorise their participation. In terms of ethics,
27 19 the guidelines of the Declaration of Helsinki (2008) were followed with respect to
28 20 consent, confidentiality and the anonymous nature of the responses.
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9 1 ***Instruments***

10 2 *Motivational Climate.* The Spanish version of the Perceived Motivational Climate Scale
11 3 (PMCS) (Biddle et al., 1995), adapted to the PE context (Gutiérrez et al., 2011) was
12 4 used. The introductory sentence of the scale was adapted to the corporal expression
13 5 content area: "In the skipping rope lessons, our PE teacher...". It was comprised of 19
14 6 items, grouped into two factors that measured perceived task-oriented motivational
15 7 climate (12 items; e.g. "The PE teacher is pleased when everyone improves") and
16 8 perceived ego-oriented motivational climate (7 items; e.g. "The teacher particularly
17 9 appreciates those who win"). The reliability analysis obtained values of Cronbach's
18 10 alpha of .81 for the task-oriented climate and .80 for the ego-oriented climate.

19 11 *Basic Psychological Needs.* The Spanish version of the Basic Psychological Needs in
20 12 Exercise Scale (BPNES) (Vlachopoulos and Michailidou, 2006) adapted to the PE
21 13 context (Moreno et al., 2008) was used. This instrument was adapted, modifying the
22 14 initial sentence to the skipping rope content area, "In the skipping rope lessons...". This
23 15 questionnaire contained 12 items grouped into three factors (4 items per factor) that
24 16 measured autonomy (e.g. "I feel that I have the opportunity to make choices with
25 17 respect to the way I exercise"), competence (e.g. "I feel that exercise is an activity that I
26 18 do very well") and relatedness (e.g. "I feel extremely comfortable when I am with the
27 19 other exercise participants"). The values of Cronbach's alpha were .78 for autonomy
28 20 satisfaction, .72 for perceived competence and .77 for relatedness.

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9 1 *Self-Determined Motivation*. The Spanish version of the Situational Motivation Scale
10 2 (SIMS) (Guay et al., Blanchard, 2000), validated to the education context (Martín-Albo
11 3 et al., 2009) was used. The introductory question was adapted to the skipping rope
12 4 content area: "Why do you currently take part in the skipping rope lessons?" The scale
13 5 was comprised of 14 items, grouped into four factors that measured intrinsic motivation
14 6 (4 items, e.g. "Because I feel good when I do this activity"), identified regulation (3
15 7 items, e.g. "Because I believe that this activity is important for me"), external regulation
16 8 (3 items, e.g. "Because I feel that I have to do it") and amotivation (4 items, e.g. "I do
17 9 this activity but I am not sure if it is worth it"). Due to the fact that this version had not
18 10 been previously used in the PE context, the validity of the instrument was verified
19 11 through a confirmatory factor analysis (CFA), testing the same theoretical model
20 12 presented in the Spanish validation by Martín-Albo et al. (2009) and comparing it with
21 13 the data obtained in this study. The results of the CFA indicated adequate adjustment of
22 14 the data for a four-factor structure through the different adjustment indices assessed (χ^2
23 15 = 186.58, $p < .001$; $\chi^2/df = 2.63$; RMSEA = .08; CFI = .92; TLI = .90; SRMR = .07).
24 16 The coefficients of Cronbach's alpha were .87 for intrinsic motivation, .69 for identified
25 17 regulation, .82 for external regulation and .76 for amotivation.

26 18 *Enjoyment/Satisfaction and Boredom*. The Spanish version of the Sport Satisfaction
27 19 Instrument (SSI) (Duda and Nicholls, 1992), validated and adapted to PE (Baena-
28 20 Extremera et al., 2012), was used. The heading was adapted to the skipping rope content
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1 area: "Have you had a good time in the PE skipping rope classes...?" The scale was
2 comprised of a total of 8 items, grouped into two factors that measured
3 enjoyment/satisfaction (5 items, e.g. "I usually enjoy this activity") and boredom (3
4 items, e.g. "In this activity, I usually wish the class would end quickly"). The values of
5 Cronbach's alpha were .72 for enjoyment and .89 for boredom.

6 The response format used in each of the measurement instruments was indicated on a
7 Likert scale of one to five, where 1 corresponded to totally disagree and 5 to totally
8 agree with the question asked.

9 *Procedure*

10 A five-week training programme with a total of 55 hours was prepared for the
11 experimental group teacher, following the guidelines indicated by Braithwaite et al.
12 (2011), in order to guarantee that the subsequent intervention programme was correctly
13 implemented. During the first phase, the teacher received specific training aimed at
14 understanding the social cognitive theories present in this study. Practical sessions
15 related to the skipping rope content area were also held and PE teaching methods using
16 digital video (DV) were analyzed, in order to learn to implement and recognise different
17 teaching intervention strategies. The PE teacher observed five videotapes of PE lessons,
18 with a five-minute interval between each to report on the teaching behaviour. In the
19 second phase, a team of experts (four males and one female) in the fields of PE teaching
20 and PE research drew up, together with the experimental group PE teacher, the corporal

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9 1 expression unit, focusing on skipping rope activities. On the one hand, two of the
10 2 experts had at least fifteen years' experience in skipping rope activities at high school
11 3 level and they were also highly qualified in Sport and Exercise Science in Spain. On the
12 4 other hand, two of the experts have published material on the application of TARGET
13 5 areas in PE and have knowledge of the motivational theories. Finally, one of the males
14 6 was an expert in the PE curriculum in Spain and was qualified in the design of
15 7 systematic observation instruments to identify strategies associated with motivational
16 8 climates created by PE teachers. In all sessions, at least one motivational strategy
17 9 located within each one of the TARGET dimensions (i.e. task, authority, recognition,
18 10 grouping, evaluation and time) was implemented in the design. Finally, and during the
19 11 third phase, different teaching videos and curricular material were prepared to
20 12 implement some of the teaching strategies. The two PE teachers taught this content area
21 13 at the same time during the months of February to April, with a frequency of 2 weekly
22 14 sessions, each one lasting for 50 minutes. After the last unit session, a dossier was given
23 15 out with the different questionnaires to be completed in the PE classroom, without the
24 16 PE teacher. The time required by the students to complete the different questionnaires
25 17 was 15 to 20 minutes.

18 ***Intervention***

19 The pedagogical model used in the corporal expression unit, both in the control group
20 and in the experimental group, was the tactical games model (TGM) (see Stoltz and Pill,
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9 1 2014 for a further review). The independent variable of the study was the teaching
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11 2 intervention programme, based on the development and application of specific
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13 3 motivational strategies associated with the TARGET areas (Ames, 1992). The control
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15 4 group teacher had no knowledge of the theories and motivational strategies. Thus, the
16
17 5 TARGET areas were not intentionally used in the control group.

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20 6 The experimental group unit began with the video that showed corporal expression,
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22 7 focused on skipping rope activities, in different contexts (e.g. streets, PE, playtimes),
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24 8 trying to reduce social stereotypes in boys and girls. This activity was linked to a social
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26 9 situation of reference (i.e. a choreographic sequence using skipping ropes is performed
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28 10 every year by students), by way of a final Flash mob performance by the students in the
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30 11 school playground. TARGET areas were applied as follow:

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33 12 • Task area: throughout the unit, the teacher implemented a large variety of
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35 13 corporal expression activities and variants based on the initial evaluation (i.e.
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37 14 corporal expression activities with individual rope, long rope and double rope
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39 15 were selected, based on the teaching objectives proposed, progressively
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41 16 increasing in complexity). Likewise, the students had the opportunity to create
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43 17 steps in order to design a choreographic sequence using skipping ropes.
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46 18 • Authority area: the curricular materials enabled pupils to independently carry out
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48 19 the activities proposed, setting their own learning pace and evaluating their
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50 20 progression with respect to the steps suggested. Students were allowed to get
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9 1 involved in their own learning, progressively giving them autonomy in decision-
10 2 making and responsibility in their unit (i.e. they could choose aspects such as
11 3 music, clothes, spatial location, the different steps, links, etc., for the
12 4 choreographic performance).
- 13 5 • Recognition area: continuous positive and cognitive-interrogative feedback was
14 6 given in all sessions, both as individuals and as a group, associating the
15 7 attitudinal terrain (e.g. "You are making a great effort, great progression is
16 8 noticed"), the conceptual terrain (e.g. "Who sets the rhythm in the long rope
17 9 jumping?"), and procedural terrain (e.g. "You are adapting the way you turn the
18 10 rope very well, observing your companion. I congratulate you"). Comparison
19 11 among students was avoided at all times.
 - 20 12 • Grouping area: the teacher allowed pupils to form heterogeneous groups to promote
21 13 their social interaction and integration. The teacher also mediated in different
22 14 conflicts, adopting an attitude of empathy and listening, trying to evaluate his or
23 15 her students' contributions (e.g. "The comment that your classmate has made is
24 16 very interesting")
 - 25 17 • Evaluation area: pupils were able to choose the weighting of their own
26 18 evaluation, based on ranges established by the teacher (e.g. "What percentage do
27 19 you want to give to the choreographic sequence? The score can account for 20%
28 20 to 35% of the final mark"). The curricular material given out throughout the unit
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1 and in the choreographic sequence allowed students to assess themselves (i.e.
2 self-reported) in the unit and also to co-assess their different classmates. Each
3 student was evaluated individually in order to verify their progression, and
4 provide specific and adapted information about the learning process.

- 5 • Time area: the teacher regulated the students' learning pace at all times,
6 developing reinforcement and extension activities. Likewise, the teacher also
7 provided facilities as well as timeslots during break-time as well as in the
8 afternoons to be able to set up the final choreographic sequence.

9 ***Data analysis***

10 Kolmogorov-Smirnov's normality test was performed, obtaining adequate values in all
11 cases ($p > .05$), and then a confirmatory factor analysis was performed for the Situational
12 Motivation Scale. Later on, internal consistency was calculated using the coefficient of
13 Cronbach's alpha, as well as descriptive statistics (mean and standard deviation) of each
14 factor. A two-factor (group x gender) multivariate analysis of variance (MANOVA) was
15 performed to evaluate the impact of the intervention programme on the different study
16 variables, in both the control group and experimental group. The effect of gender was
17 also evaluated to observe the differences between the boys and girls in both groups –
18 control and experimental - in the different study variables, following the intervention
19 programme. The effect size was also calculated using the Partial Eta Squared statistic
20 (η^2_p), which provided an insight into the magnitude of the differences found, as the

1 influence of the sample size was eliminated. Finally, a 95% confidence interval was
2 calculated for the differences. The SPSS 21.0 statistics software was used to carry out
3 all of these analyses.

4 **Results**

5 The results of the MANOVA showed a main significant effect with regard to the group
6 (control and experimental) with a high effect size (Wilks' Lambda = .787; $F(11, 212)$
7 = 5.209; $p < .001$; $\eta^2_p = .213$).

8 In Table 1 we can see that the experimental group presented significantly higher values
9 in perceived task-oriented motivational climate ($p < .001$), autonomy ($p = .027$),
10 competence ($p < .001$), intrinsic motivation ($p < .001$), identified regulation ($p = .005$) and
11 enjoyment ($p < .001$), as well as significantly lower values in ego-oriented climate ego
12 ($p < .001$) after the intervention programme.

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14 'INSERT TABLE 1 ABOUT HERE'

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16 Table 2 presents the intervention results of both boys and girls. There is a significant
17 effect of the intervention (i.e. control group vs. experimental group) in the male gender
18 (Wilks' Lambda = .850; $F(11, 210) = 3.359$; $p < .001$; $\eta^2_p = .150$). In this sense, the
19 boys from the experimental group presented significantly higher values in perceived
20 task-oriented climate ($p < .001$), autonomy ($p = .011$), competence ($p < .001$), intrinsic

1 motivation ($p < .001$), identified regulation ($p < .001$), and enjoyment ($p = .003$), as well
2 as significantly lower values in the ego-oriented climate ($p < .001$) with respect to the
3 boys from the control group. With reference to the girls, there is also a significant effect
4 of the intervention (i.e. control group vs. experimental group; Wilks' Lambda = .876; F
5 (11, 210) = 2.690; $p = .003$; $\eta^2_p = .124$). The girls from the experimental group
6 presented significantly higher values in perceived task-oriented climate ($p = .002$),
7 intrinsic motivation ($p = .028$) and enjoyment ($p = .006$), as well as significantly lower
8 values in ego-oriented climate ($p < .001$) with respect to the girls from the control group.

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10 'INSERT TABLE 2 ABOUT HERE'

11 12 Discussion

13 The first objective of this study was to evaluate the impact of an intervention
14 programme on a series of motivational variables integrated into SDT (Ryan and Deci,
15 2000) and AGT (Nicholls, 1989) in a corporal expression unit.

16 To this end, the first hypothesis proposed that the strategies developed in the
17 intervention programme would generate a greater task-oriented climate and
18 consequently, greater self-determined regulation, greater satisfaction of the BPN and
19 greater enjoyment in the experimental group. The results obtained confirm this
20 hypothesis. Thus, the intervention programme proved to be effective in developing a

1 task-oriented motivational climate in this corporal expression unit, giving rise to greater
2 satisfaction of the BPN of autonomy and competence, as well as greater intrinsic
3 motivation and enjoyment. Likewise, the intervention represented a decrease in the ego-
4 oriented motivational climate, so the strategies led to the students not perceiving that
5 their progress was being comparatively evaluated with respect to their companions'
6 progress. Therefore, as suggested by Braithwaite et al. (2011), the specific motivational
7 strategies for this corporal expression unit proved to be effective in generating a task-
8 oriented climate because they fostered variety in the activities and personal challenge,
9 they allowed students to make decisions and acquire responsibilities, they favoured
10 private and significant teaching feedback, they made multiple group formats possible,
11 they emphasised an evaluation that takes personal and individual progress into account,
12 and they regulated the students' learning pace.

13 These findings are in line with other results obtained following the development and
14 implementation of the TARGET areas, established by Ames (1992), in a corporal
15 expression content area (e.g. Sevil et al., 2014). Likewise, other intervention studies in
16 different content areas (e.g. orienteering, basketball, handball) where the motivational
17 climate was manipulated and specific teaching strategies were applied, have obtained
18 significantly higher values in variables included in these two social cognitive theories
19 (e.g. perceived task-oriented climate, competence, autonomy, identified regulation and
20 enjoyment) (Almolda-Tomás et al., 2014; Gray et al., 2009; Hastie et al., 2014). In this

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9 1 study, no significant differences were found after the intervention programme in some
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11 2 BPN, such as relatedness. This may be due to the high values shown in the control
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13 3 group. In previous studies performed in PE contexts, the need for relatedness usually
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15 4 obtained higher values in students (Amado et al., 2014). However, emphasis should be
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17 5 placed on including specific teaching strategies that favour the support of this
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19 6 psychological mediator, given its effect on the more volitional profiles in boys and girls
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21 7 in PE classes (Ferriz et al., 2013; Shen et al., 2012). Therefore, greater levels of
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23 8 motivational variables at a situational level (i.e. content area) could influence those
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25 9 motivational variables at a contextual level (i.e. PE classes), resulting as a consequence
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27 10 in a higher level of adherence to out of school PA (González-Cutre et al., 2014a).
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30 11 Likewise, whether gender could be an influential variable on the effectiveness of the
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32 12 intervention was analysed. Thus, the second hypothesis postulated that the effect of the
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34 13 intervention would be equally effective in boys and girls from the experimental group.
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36 14 The results indicated that this hypothesis is partially satisfied.
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39 15 With regard to the effects of the intervention of this unit on the experimental group,
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41 16 significantly higher values were seen in boys and girls in perceived task-oriented
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43 17 climate, intrinsic motivation and enjoyment, and lower values in ego-oriented climate.
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45 18 Therefore, despite the social stereotypes of this type of corporal expression activity, the
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47 19 TARGET areas proved to be effective in manipulating the learning environment,
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49 20 achieving greater perceived task-oriented motivational climate and less perceived ego-
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1 oriented climate in boys and girls. Likewise, the higher levels of intrinsic motivation
2 and enjoyment in boys and girls suggest that these specific strategies have had an
3 impact on autonomous motivation, obtaining positive outcomes in this corporal
4 expression unit. This is especially relevant as some content areas, such as those
5 associated with the corporal expression activity block, normally generate an attitude of
6 rejection, lack of interest and amotivation among pupils (O'Neill et al., 2011). This
7 occurs more often among boys, who show a greater preference for more competitive
8 activities. Moreover, despite studies indicating that boys experience greater motivation
9 in PE classes, the type of methodology and content area may condition this
10 preconceived idea (Mitchell et al., 2013). Therefore, the effectiveness of the
11 intervention programme provides PE professionals with the necessary methodological
12 guidelines to be able to implement corporal expression oriented activities.

13 Similarly, with respect to the boys, significantly higher values were observed in the
14 experimental group in other study variables, such as the BPN of autonomy and
15 competence, and identified regulation. However, the girls in the control group, probably
16 due to their interests and preferences in this type of activity (Ruiz et al., 2010),
17 experienced high levels of perceived competence and autonomy, and no significant
18 differences were obtained with respect to the experimental group. In the same way,
19 Harness (2001) showed that girls should be perceived as being competent in this activity
20 due to social-cultural reasons, such as girls being mainly attributed to this type of

1 content area. On the contrary, the boys from the control group, given the expressive and
2 cooperative nature of the content area, perceived lower levels of competence and
3 autonomy. Moreover, the intervention proved to be more effective in the boys from the
4 experimental group. These results are in line with the study by Murillo et al. (2014)
5 where, in a corporal expression unit and with a comprehensive teaching methodology,
6 the girls considered that they were more competent than the boys. Taken as a whole,
7 findings highlight the importance of the teaching intervention in PE classes, especially
8 in those units that contain certain social stereotypes and barriers to engagement with
9 respect to either gender. Thus, the motivational strategies developed may contribute to
10 more positive experiences in boys and girls, favouring greater adherence to PA
11 (Aelterman et al, 2014; Bennie and Langan, 2014).

12 In terms of practical implications, it seems necessary for the PE teacher to create a task-
13 oriented climate for both boys and girls. Thus, motivational strategies must be a
14 complement to TGM. These results support the need to carry out intervention studies,
15 developing specific strategies in order to assess their effectiveness in boys and girls,
16 both in perceived motivational climate and in other motivational variables related to PE.
17 Thus, as indicated by Green and Glasgow (2006), if we want more evidence-
18 based practice, we need more practice-based evidence.

19 Despite the effectiveness of the work, a series of limitations are raised as well as
20 possibilities for future studies. In this study, even though the application of strategies

1 was controlled, there was no systematic recording of these strategies by the teacher, so
2 the implementation of observational methodology opens up a complementary line to
3 analyse perceived motivational climate in the classroom (see Julián et al., 2010). This
4 methodology may help to to assess the teaching behaviour generated in the intervention.
5 Another possible limitation of the study was that the control and experimental groups
6 had a different teacher. Furthermore, it would be helpful for future intervention studies
7 to compile baseline and follow-up measures to further our understanding of TARGET
8 interventions. Likewise, in future studies it seems advisable to implement intervention
9 programmes in other artistic expression content areas (e.g. dance, acrosport) and
10 invasion sports (e.g. football, basketball, hockey), to assess the effects produced in boys
11 and girls. The inclusion of other study variables included within these two social
12 cognitive theories (e.g. students' motivational orientation, support and thwarting of
13 BPN, predisposition towards PA, learning) or of the objective quantification of MVPA
14 levels in the unit, could provide a broader vision of the effects of the intervention
15 generated. Likewise, the implementation of qualitative methodology could lead to a
16 more in-depth analysis of students' motivation. On the other hand, the small number of
17 TARGET based intervention studies that determine the effects produced consistent with
18 the gender, has hindered the comparison and discussion of the results obtained.
19 Therefore, the more studies that provide empirical evidence of the findings generated in
20 this intervention studies seem to be necessary.

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9 **Conclusions**

10 The results indicate that, despite the social stereotypes and beliefs that may be
11 associated with corporal expression activities, an intervention based on specific
12 motivational teaching strategies, adapted to this content area, may represent greater
13 perceived task-oriented climate, getting boys and girls to be more motivated and to
14 enjoy this type of activity more. Likewise, the intervention programme is effective in
15 boys and girls, even producing better results in some variables in the boys, who are
16 usually less interested and have less motivation with respect to this type of activity.
17 Thus, the results indicate the importance of creating a task-oriented climate in PE
18 classes which will promote more positive experiences, favouring students' development
19 and encouraging more volitional behaviours. All of this may help overcome some of the
20 barriers to engage in corporal expression activities in PE classes, especially in boys,
21 resulting in possible greater adherence to PA.
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42 **References**

43 Aelterman N, Vansteenkiste M, Van den Berghe, et al. (2014) Fostering a need-
44 supportive teaching style: intervention effects on physical education teachers'
45 beliefs and teaching behaviors. *Journal of Sport and Exercise Psychology* 36(6):
46 595-609.
47
48
49
50
51
52
53
54
55
56
57
58
59
60

- 1 Almolda-Tomás FJ, Sevil-Serrano J, Julián-Clemente J, et al. (2014) Application of
2 teaching strategies for improving students' situational motivation in Physical
3 Education. *Electronic Journal of Research in Educational Psychology* 12(2):
4 391-418.
- 5 Amado D, Del Villar F, Leo FM, et al. (2014) Effect of a multi-dimensional
6 intervention programme on the motivation of physical education students. *PLoS*
7 *ONE* 9(1): e85275.
- 8 Ames C (1992) Achievement goals, motivational climate, and motivational processes.
9 In: Roberts GC (ed.), *Motivation in sport and exercise*. Champaign, IL: Human
10 Kinetics. pp. 161-176.
- 11 Baena-Extremera A, Granero-Gallegos A, Bracho-Amador C, et al. (2012) Spanish
12 version of the sport satisfaction instrument (SSI) adapted to physical education.
13 *Journal of Psychodidactics* 17(2): 377-395.
- 14 Barkoukis V and Hagger M (2013) The trans-contextual model: perceived learning and
15 performance motivational climates as analogues of perceived autonomy
16 support. *European Journal of Psychology Education* 28: 353-372.
- 17 Barkoukis V, Koidou E and Tsorbatzoudis H (2010) Effects of a motivational
18 climate intervention on state anxiety, self-efficacy, and skill development in
19 physical education. *European Journal of Sport Science* 10(3): 167-177.

- 1
2
3
4
5
6
7
8
9 1 Barkoukis V, Tsorbatzoudis H and Grouios G (2008) Manipulation of motivational
10 2 climate in physical education: Effects of a seven-month intervention. *European*
11 3 *Physical Education Review* 14(3): 367-387.
12
13
14
15 4 Belton S, Wesley O, Meegan S, et al. (2014) Youth-physical activity towards health:
16 5 Evidence and background to the development of the Y-PATH physical activity
17 6 intervention for adolescents. *BMC Public Health* 14(1): 122-134.
18
19
20
21 7 Bennie A and Langan E (2014) Physical activity during physical education lessons: a
22 8 qualitative investigation of Australian PE teacher perceptions. *International*
23 9 *Journal of Qualitative Studies in Education* 28(8): 970-988.
24
25
26
27
28 10 Biddle SJ, Cury F, Goudas M, et al. (1995) Development of scales to measure perceived
29 11 physical education class climate: A cross-national project. *British Journal of*
30 12 *Educational Psychology* 65(3): 341-358.
31
32
33
34
35 13 Braithwaite R, Spray CM and Warburton VE (2011) Motivational climate interventions
36 14 in physical education: A meta-analysis. *Psychology of Sport and Exercise* 12(6):
37 15 628-638.
38
39
40
41
42 16 Brooke HL, Corder K, Griffin SJ, et al. (2014) Physical activity maintenance in the
43 17 transition to adolescence: A longitudinal study of the roles of sport and lifestyle
44 18 activities in british youth. *PLoS ONE* 9(2): e89028.
45
46
47
48
49
50
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52
53
54
55
56
57
58
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- 1
2
3
4
5
6
7
8
9 1 Camacho-Miñano MJ, LaVoi NM and Barr-Anderson DJ (2011) Interventions to
10 promote physical activity among young and adolescent girls: a systematic
11 review. *Health Education Research* 26(2): 1025-1049.
12
13
14
15 4 Campbell DT and Stanley J (1966) *Experimental and quasi-experimental designs for*
16 *research*. Boston: Houghton Mifflin Co.
17
18
19 6 Cecchini JA, Fernández-Río J and Méndez-Giménez A (2014) Effects of Epstein's
20 TARGET on adolescents' intentions to be physically active and leisure-time
21 physical activity. *Health Educational Research* 29(3): 485-490.
22
23
24 8
25
26 9 Cecchini J, Gonzalez C, Carmona A, et al. (2001) The influence of the physical
27 education teacher on intrinsic motivation, self-confidence, anxiety, and pre- and
28
29 10 education teacher on intrinsic motivation, self-confidence, anxiety, and pre- and
30 post-competition mood states. *European Journal of Sport Science* 1(4): 1-11.
31
32
33 12 Dauenhauer B and Keating XD (2011) The influence of physical education on physical
34 activity levels of urban elementary students. *Research Quarterly for Exercise*
35 *and Sport* 82(3): 512-520.
36
37
38 14
39
40 15 Deci EL and Ryan RM (2000) The «what» and «why» of goal pursuits: Human needs
41 and the self-determination of behaviour. *Psychological Inquiry* 11: 227-268.
42
43
44 17 Declaration of Helsinki (2008). World Medical Association. Available from: [http://](http://www.wma.net/e/ethicsunit/helsinki.htm)
45 www.wma.net/e/ethicsunit/helsinki.htm
46
47
48 19 Duda JL and Nicholls JG (1992) Dimensions of achievement motivation in scholwork
49 and sport. *Journal of Educational Psychology* 84(3): 290-299.
50
51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
8
9 1 Enright E and O’Sullivan M (2012) Physical Education ‘in All Sorts of Corners’:
10 Student Activists Transgressing Formal Physical Education Curricular
11 Boundaries. *Research Quarterly for Exercise and Sport* 83(2): 255-267.
12
13
14
15 4 Ferriz R, Sicilia A and Sáenz-Álvarez P (2013) Predicting satisfaction in physical
16 education classes: A study based on self-determination theory. *The Open*
17 *Education Journal* 6: 1-7.
18
19
20
21
22 7 Garn AC, McCaughy N, Shen B, et al. (2013) Underserved adolescent girls’ physical
23 activity intentions and behaviors: relationships with the motivational climate
24 and perceived competence in physical education. *Advances in Physical*
25 *Education* 3(2): 103-110.
26
27
28
29
30
31 11 González-Cutre D, Ferriz R, Beltrán-Carrillo VJ, et al. (2014a) Promotion of autonomy
32 for participation in physical activity: a study based on the trans-contextual
33 model of motivation. *Educational Psychology* 34(3): 367-384.
34
35
36
37 14 González-Cutre D, Sicilia A, Beas-Jiménez M, et al. (2014b) Broadening the trans-
38 contextual model of motivation: A study with Spanish adolescents.
39 *Scandinavian Journal of Medicine and Science in Sports* 24(4): 306-319.
40
41
42
43
44 17 González-Cutre D, Sicilia A and Moreno JA (2011) Un estudio cuasi-experimental de
45 los efectos del clima motivador tarea en las clases de Educación Física. *Revista*
46 *de Educación* 356: 677-700.
47
48
49
50
51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
8
9 1 Gråstén A, Jaakkola T, Liukkonen J, et al. (2012) Prediction of enjoyment in school
10 physical education. *Journal of Sports Science and Medicine* 11(2): 260-269.
11
12
13 2 Gray S, Sproule J and Morgan K (2009) Teaching team invasion games and
14
15 3 motivational climate. *European Physical Education Review* 15(1): 65-89.
16
17
18 4 Green LW and Glasgow RE (2006) Evaluating the relevance, generalization, and
19
20 5 applicability of research; issues in translation methodology. *Evaluation for*
21
22 6 *the Health Professions* 29(1): 126-153.
23
24
25 7 Guay F, Vallerand, RJ and Blanchard C (2000) On the assessment of state intrinsic and
26
27 8 extrinsic motivation: The situational motivation scale (SIMS). *Motivation and*
28
29 9 *Emotion* 24(3): 175-213.
30
31
32 10 Gutiérrez M, Ruiz LM and López E (2011) Clima motivacional en Educación Física:
33
34 11 concordancia entre las percepciones de los alumnos y las de sus profesores.
35
36 12 *Revista de Psicología del Deporte* 20(2): 321-335.
37
38
39 13 Ha AS, Lonsdale C, Ng YY, et al. (2014) A school-based rope skipping intervention for
40
41 14 adolescents in Hong Kong: protocol of a matched-pair cluster randomized
42
43 15 controlled trial. *BMC Public Health* 14(1): 535.
44
45
46 16 Ha AS, Wong S, Chan DW, et al. (2006) Effects of a skipping and health education
47
48 17 program among school children in Hong Kong. *Journal of ICHPER-SD* 42: 14-
49
50 18 19.
51
52
53
54
55
56
57
58
59
60

- 1
2
3
4
5
6
7
8
9 1 Haerens L, Aelterman N, Vansteenkiste M, et al. (2015) Do perceived autonomy-
10 supportive and controlling teaching relate to physical education students'
11 motivational experiences through unique pathways? Distinguishing between the
12 bright and dark side of motivation. *Psychology of Sport and Exercise* 16(3): 26-
13 36.
14
15
16
17
18
19 6 Hallal PC, Andersen LB, Bull FC, et al. (2012) Global physical activity levels:
20 surveillance progress, pitfalls, and prospects. *Lancet* 380(9838): 247-257.
21
22
23 8 Harness G (2001) Organizing participation in cross-sex jump rope: situating gender
24 differences within longitudinal studies of activities. *Research on Language &*
25 *Social Interaction* 34(1): 75-106.
26
27
28
29 10 Harwood C, Spray CM and Keegan R (2008) Achievement goal theories in sport. In:
30 Horn T (eds) *Advances in sport psychology*. Champaign, IL: Human Kinetics.
31 pp. 157-186.
32
33
34
35
36
37 14 Hastie P, Sinelnikov O, Wallhead T, et al. (2014) Perceived and actual motivational
38 climate of a mastery-involving sport education. *European Physical Education*
39 *Review* 20(2): 215-228.
40
41
42
43
44 17 Herman KM, Craig CL, Gauvin L, et al. (2009) Tracking of obesity and physical
45 activity from childhood to adulthood: the physical activity longitudinal study.
46 *International Journal of Pediatric Obesity* 4(4): 281-288.
47
48
49
50
51
52
53
54
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42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- 1 Henshaw A, Kelly J and Gratton C (1992) Skipping's for girls: children's perceptions of
2 gender roles and gender preferences. *Educational Research* 34(3): 229-235.
- 3 Inchley J, Kirby J and Currie C (2011) Longitudinal changes in physical self-
4 perceptions and associations with physical activity during adolescence.
5 *Pediatric Exercise Science* 23(2): 237-249.
- 6 Julián JA, Abarca-Sos A, Aibar A, et al. (2010) La observación sistemática como
7 instrumento de análisis del clima motivacional en educación física. *Motricidad*.
8 *European Journal of Human Movement* 25: 119-142.
- 9 Leversen I, Danielsen AG, Wold B, et al. (2012) What they want and that they get: self-
10 reported motives, perceived competence, and relatedness in adolescent leisure
11 activities. *Child Development Research*. Available at:
12 <http://www.hindawi.com/journals/cdr/2012/684157/>
- 13 Martín-Albo J, Nuñez JL and Navarro JG (2009) Validation of the Spanish Version of
14 the Situational Motivation Scale (EMSI) in the Educational Context. *The Spanish*
15 *Journal of Psychology* 12(2): 799-807.
- 16 Matanin M and Collier C (2003) Longitudinal analysis of preservice teachers' beliefs
17 about teaching physical education. *Journal of Teaching in Physical Education*
18 22(2): 153-168.
- 19 Méndez-Giménez A, Fernández-Río J and Cecchini, JA (2013) Papel importante del
20 alumnado, necesidades psicológicas básicas, regulaciones motivacionales y

- 1
2
3
4
5
6
7
8
9 1 autoconcepto físico en educación física. *Cuadernos de Psicología del Deporte*
10 2 13(1): 71-82.
11
12
13 3 Mitchell F, Gray S and Inchley J (2013) 'This choice thing really works ...' Changes in
14 4 experiences and engagement of adolescent girls in physical education classes,
15 5 during a school-based physical activity programme. *Physical Education and*
16 6 *Sport Pedagogy*. Available at :
17 7 [http://www.tandfonline.com/doi/abs/10.1080/17408989.2013.837433?journalC](http://www.tandfonline.com/doi/abs/10.1080/17408989.2013.837433?journalCode=cps20#.VfB_INLtmko)
18 8 [ode=cps20#.VfB_INLtmko](http://www.tandfonline.com/doi/abs/10.1080/17408989.2013.837433?journalCode=cps20#.VfB_INLtmko)
19
20
21
22
23
24
25
26 9 Moreno JA, González-Cutre D, Chillón M, et al. (2008) Adaptación a la educación
27 10 física de la Escala de las Necesidades Psicológicas Básicas en el Ejercicio
28 11 (BPNES). *Revista Mexicana de Psicología* 25(2): 295-303.
29
30
31
32
33 12 Murillo B, Julián JA, García-González L, et al. (2014) Influencia del género y de los
34 13 contenidos sobre la actividad física y la percepción de competencia en
35 14 Educación Física. *RICYDE. Revista Internacional de Ciencias del Deporte*
36 15 36(10): 131-143.
37
38
39
40
41
42 16 Naylor PT, Nettlefold, J, Race D, et al. (2015) Implementation of school based physical
43 17 activity interventions: A systematic review. *Preventive Medicine* 72: 95-115.
44
45
46 18 Nicholls J (1989) *The competitive ethos and. democratic education*. Cambridge, MS:
47 19 Harvard University Press.
48
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4
5
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7
8
9 1 Ntoumanis N and Standage M (2009) Motivation in physical education classes: A self-
10 2 determination theory perspective. *Theory and Research in Education* 7(2): 194-
11 3 202.
12
13
14 4 O'Neill JR, Pate RR and Liese AD (2011) Descriptive epidemiology of dance
15 5 participation in adolescents. *Research Quarterly for Exercise and Sport* 82(3):
16 6 373-380.
17
18 7 Pratt M, Norris J, Lobelo F, et al. (2014) The cost of physical inactivity: moving into
19 8 the 21st century. *British Journal of Sports Medicine* 48(3): 171-173.
20
21 9 Robles J, Abad MT, Castillo E, et al. (2013) Factores que condicionan la presencia de la
22 10 expresión corporal en la enseñanza secundaria según el profesorado de
23 11 educación física. *Revista Retos. Nuevas tendencias en Educación Física,*
24 12 *Deporte y Recreación* 24: 171-175.
25
26 13 Ryan RM and Deci EL (2000) Self-determination theory and the facilitation of intrinsic
27 14 motivation, social development, and well-being. *The American Psychologist*
28 15 55(1): 68-78.
29
30 16 Ruiz LM, Graupera JL, Moreno JA, et al. (2010) Social preferences for learning among
31 17 adolescents in secondary physical education. *Journal of Teaching in Physical*
32 18 *Education* 29(1): 3-20.
33
34
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5
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7
8
9 1 Sallis JF, McKenzie TL, Beets MW, et al. (2012) Physical education's role in public
10 2 health: steps forward and backward over 20 years and HOPE for the Future.
11 3 *Research Quarterly for Exercise and Sport* 83(2): 125-135.
12 4
13 5 Sánchez-Oliva D, Sánchez-Miguel PA, Leo FM, et al. (2014) Physical education
14 6 lessons and physical activity intentions within spanish secondary schools: A
15 7 self-determination perspective. *Journal of Teaching in Physical Education*
16 8 33(2): 232-249.
17 9
18 10 Sebire SJ, McNeill J, Pool L, et al. (2013) Designing extra-curricular dance programs:
19 11 UK physical education and dance teachers perspectives. *Open Journal of*
20 12 *Preventive Medicine* 3(1): 111-117.
21 13
22 14 Sevil J, Julián JA, Abarca-Sos A, et al. (2014) Efecto de una intervención docente para
23 15 la mejora de las variables motivacionales situacionales en las clases de
24 16 Educación Física. *Revista Retos. Nuevas tendencias en Educación Física,*
25 17 *Deporte y Recreación* 26: 108-113.
26 18
27 19 Shen B, McCaughtry N, Martin JJ, et al. (2012) Urban high-school girls' sense of
28 20 relatedness and their engagement in physical education. *Journal of Teaching in*
29 21 *Physical Education* 31(3): 231-245.
30 22
31 23 Smart JE, Cumming SP, Sherar LB, et al. (2012) Maturity associated variance in
32 24 physical activity and health-related quality of life in adolescent females: a
33 25 mediated effects model. *Journal of Physical Activity and Health* 9(1): 86-95.
34 26
35 27
36 28
37 29
38 30
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4
5
6
7
8
9 1 Stolz S and Pill S (2014) Teaching games and sport for understanding. Exploring and
10 2 reconsidering its relevance in physical education. *European Physical Education*
11 3 *Review* 20(1): 36-71.
12
13
14
15 4 Ullrich-French S and Cox AE (2014) Normative and intra-individual changes in
16 5 physical education motivation across the transition to middle school: A
17 6 multilevel growth analysis. *Sport, Exercise and Performance Psychology* 3(2):
18 7 132-147.
19
20
21
22
23
24 8 Vallerand RJ (2007) Intrinsic and Extrinsic Motivation in Sport and Physical Activity.
25 9 A Review an a Look at the Future. In: Tenenbaum G and Eklund RC (eds).
26 10 *Handbook of Sport Psychology*. New York: John Wiley and Sons. pp. 59-83.
27
28
29
30
31 11 Van den Berghe L, Vansteenkiste M, Cardon G, et al. (2014) Research on self-
32 12 determination in physical education: key findings and proposals for future
33 13 research. *Physical Education and Sport Pedagogy* 19(1): 97-121.
34
35
36
37 14 Viciano J, Cervelló EM and Ramírez-Lechuga J (2007) Effect of manipulating positive
38 15 and negative feedback on goal orientations, perceived motivational climate,
39 16 satisfaction, task choice, perception of ability, and attitude toward physical
40 17 education lessons. *Perceptual and Motor Skills* 105(1): 67-82
41
42
43
44
45
46 18 Vlachopoulos SP and Michailidou S (2006) Development and initial validation of a
47 19 measure of autonomy, competence, and relatedness in exercise: The Basic
48
49
50
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52
53
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55
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57
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59
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3
4
5
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7
8
9 1 Psychological Needs in Exercise Scale. *Measurement in Physical Education*
10 and *Exercise Science* 10(3): 179-201.
11 2
12
13 3 Wallhead TL and Ntoumanis N (2004) Effects of a sport education intervention on
14 students' motivational responses in physical education. *Journal of Teaching in*
15 *Physical Education* 23(1): 4-18.
16 4
17 5
18
19 6 Weigand D and Burton S (2002) Manipulating achievement motivation in physical
20 education by manipulating the motivational climate. *European Journal of Sport*
21 *Science* 2(1): 1-14.
22 7
23 8
24
25 9 Zook KR, Saksvig BI, Wu TT, et al. (2014) Physical activity trajectories and multilevel
26 factors among adolescent girls. *Journal of Adolescent Health* 54(1): 74-80.
27 10
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29
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31 11
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33 12
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35 13
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37 14
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39 15
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1 **Table 1.** Analysis of differences between the control group and the experimental group
2 after the intervention programme.

Study variables	Experimental group		Control group		Contrast between groups					95% CI differences	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	Mean Diff.	Standard error	<i>F</i> (11,212)	<i>p</i>	η_p^2	LL	UL
Task-oriented climate	4.64	0.35	4.35	0.51	0.16	0.06	22.069	<.001	.090	0.16	0.40
Ego-oriented climate	2.58	0.57	2.91	0.59	-0.32	0.07	17.462	<.001	.074	-0.48	-0.17
Autonomy	3.88	0.78	3.64	0.80	0.23	0.10	4.968	.027	.022	0.02	0.44
Competence	4.20	0.63	3.89	0.65	0.31	0.08	13.032	<.001	.055	0.14	0.48
Relatedness	4.36	0.70	4.36	0.62	-0.00	0.08	0.011	.915	.000	-0.18	0.16
Intrinsic motivation	4.33	0.75	3.85	0.07	0.47	0.12	14.332	<.001	.061	0.22	0.72
Identified regulation	3.82	0.86	3.46	0.02	0.35	0.12	7.873	.005	.034	0.10	0.60
External regulation	3.23	0.28	3.50	0.24	-0.27	0.16	2.644	.105	.012	-0.60	0.05
Amotivation	1.78	0.88	1.93	0.97	-0.14	0.12	1.431	.233	.006	-0.39	0.09
Enjoyment/Satisfaction	4.49	0.63	4.03	0.01	0.46	0.11	16.836	<.001	.070	0.24	0.68
Boredom	1.71	0.82	1.84	0.89	-0.13	0.11	1.294	.256	.006	-0.35	0.09

3 **Note:** Diff = Difference; CI = Confidence interval; LL = Lower limit; UL = Upper Limit
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9 **Table 2.** ANOVA per gender between the control group and the experimental group
10 after the intervention programme.

Study variables	Gender	Experimental group		Control group		Mean Diff.	Standard error	Contrast between groups			95% CI differences	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>F</i> (11,210)	<i>p</i>	η_p^2	LL	UL
Task-oriented climate	Male	4.60	0.41	4.27	0.55	0.32	0.08	13.787	<.001	.059	0.15	0.49
	Female	4.67	0.29	4.42	0.48	0.25	0.08	9.644	.002	.042	0.93	0.41
Ego-oriented climate	Male	2.63	0.55	2.93	0.57	-0.30	0.11	7.005	.009	.031	-0.52	-0.07
	Female	2.54	0.60	2.89	0.59	-0.35	0.10	10.827	.001	.047	-0.56	-0.14
Autonomy	Male	3.93	0.78	3.53	0.91	0.39	0.15	6.522	.011	.029	0.09	0.70
	Female	3.83	0.79	3.73	0.69	0.10	0.14	0.474	.492	.002	-0.18	0.38
Competence	Male	4.32	0.56	3.86	0.65	0.46	0.12	13.684	<.001	.059	0.21	0.71
	Female	4.08	0.68	3.91	0.66	0.16	0.11	2.000	.159	.009	-0.06	0.40
Relatedness	Male	4.41	0.65	4.38	0.58	0.02	0.13	0.051	.821	.000	-0.22	0.28
	Female	4.30	0.74	4.35	0.66	-0.05	0.12	0.173	.678	.001	-0.29	0.19
Intrinsic motivation	Male	4.29	0.73	3.69	1.13	0.60	0.18	10.843	.001	.047	0.24	0.96
	Female	4.37	0.78	3.99	1.02	0.38	0.17	4.911	.028	.022	0.04	0.71
Identified regulation	Male	3.93	0.71	3.29	1.00	0.64	0.18	12.268	.001	.053	0.28	1.00
	Female	3.70	0.97	3.60	1.02	0.10	0.17	0.361	.549	.002	-0.23	0.44
External regulation	Male	3.19	1.30	3.54	1.25	-0.35	0.24	2.011	.158	.009	-0.84	0.13
	Female	3.26	1.27	3.47	1.24	-0.20	0.23	0.789	.375	.004	-0.66	0.25
Amotivation	Male	1.75	0.84	1.95	0.98	-0.35	0.24	1.161	.282	.005	-0.84	0.13
	Female	1.80	0.91	1.91	0.97	-0.20	0.23	0.384	.536	.002	-0.66	0.25
Enjoyment/Satisfaction	Male	4.46	0.51	3.96	1.10	-0.19	0.18	9.256	.003	.040	-0.55	0.16
	Female	4.51	0.73	4.07	0.93	-0.10	0.17	7.833	.006	.034	-0.44	0.23
Boredom	Male	1.65	0.74	1.90	0.86	0.50	0.16	2.149	.144	.010	0.17	0.83
	Female	1.76	0.89	1.79	0.92	0.43	0.15	0.033	.856	.000	0.13	0.74

36 **Note:** Diff = Difference; CI = Confidence interval; LL = Lower limit; UL = Upper Limit
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