The aim of this study was to learn about the effectiveness of two dance teaching techniques, the creative examination technique and the direct instruction technique, on the satisfaction of basic psychological needs, the level of self-determination, the perception of usefulness, enjoyment and effort of physical education students. Likewise, it purports to analyze the gender difference in the psychological variables addressed in agreement with the teaching technique used, to guide and personalize the treatment of these contents in physical education. A quasi-experimental design was carried out with four natural groups from two school centers. The direct instruction technique was applied with two groups and the creative examination technique with the other two, in a total of 12 sessions. An initial and final measurement was taken in both groups, and the results revealed the complexity to motivate students after 12 sessions. However, the gender-dependent analyses offer methodological guidelines, as the creative technique causes adaptative consequences on the male gender and disadaptative consequences on the female gender. By way of conclusion, we can highlight the need to devote more sessions to dance teaching and to apply different treatments depending on the gender.

Keywords: direct instruction, creative enquiry, dance, students, physical education.

Physical Education is an excellent means to develop knowledge and positive attitudes in students toward the practice of physical activity and to foster regular adherence to these activities. This prevents the creation of bad experiences in adolescence that might have a negative influence on their persistence intentions during the adult stage (González-Cutre, Sicilia, & Moreno, 2011; Hagger & Chatzisarantis, 2012; Sallis et al., 2012). There is currently a growing interest by the professionals involved in the field of educational psychology, to study students’ motivation (Gillet, Vallerand,
& Lafrenière, 2012; Jang, Reeve, & Deci, 2010) as well as the usefulness of the different subjects studied (Guay et al., 2010; McPherson & O’Neill, 2010).

A large number of researchers, working in educational contexts, have studied motivation as a multi-dimensional construct, which varies, not only in terms of intensity but also in terms of quality (Guay et al., 2010), through the Self-Determination Theory (Deci & Ryan, 1985, 2000). Researchers who use this theory study the degree of voluntariness or self-determination in people’s behavior, distinguishing different types of motivation that evolve from the most self-determined to the least self-determined behavior. The highest level of self-determination is intrinsic motivation, which represents participation in an activity due to the interest, satisfaction and pleasure obtained from it. Secondly, extrinsic motivation involves commitment to an activity due to external benefits or rewards. It is divided into four types of regulations, which include, from a higher to a lower level of self-determination, integrated, identified, introjected and external regulation. Finally, amotivation implies the lack of motivation, and it corresponds to those people who are neither intrinsically nor extrinsically motivated.

Although the motivation of students appears to be something personal and individual, it may be influenced by the social factors of the teaching–learning context, and have an impact on the satisfaction of the basic psychological needs (Deci & Ryan, 1985): the need for autonomy appears when a person is the motor of his or her own behavior and he or she participates on his or her own free will; the need for competence refers to the sensation of efficiently interacting with the environment, developing a feeling of achievement; and finally, the need for relatedness refers to the positive interaction with all other people, developing feelings of belonging in the social context where the activity is carried out. Likewise, the perception of satisfaction of these needs leads to more self-determined motivation (Sánchez-Oliva, Leo, Sánchez-Miguél, Amado, & García-Calvo, 2012; Zhang, Solomon, Kosma, Carson, & Gu, 2011), with the positive consequences that this may entail for the students, because as demonstrated, this type of motivation is linked to enjoyment, curiosity, effort, the desire to participate and the intention to continue practising an activity (García-Calvo, Sánchez-Oliva, Sánchez-Miguél, Leo, & Amado, 2012; Taylor, Ntoumanis, Standage, & Spray, 2010; Ullrich-French & Smith, 2009).

One of the social factors of the teaching–learning context, which may have an impact on the satisfaction of these needs in this context, would be the teaching methodology used by the teacher (Turner & Patrick, 2004). In this regard, it has been demonstrated that students’ interest and motivation in the educational context are determined by the extent to which the teaching staff manage to get closer to their preferences and arouse their curiosity for discovery. Working with creativity is closely associated with motivation (Hong, Hartzell, & Greene, 2009; Lapeniene & Bruneckiene, 2010) as each student is motivated by different reasons, and it is important to design activities that enable them to get closer to their concerns and that give rise to their active participation in the teaching-learning process. This is consistent with the effort that the teaching staff must express to reach the students’
expectations and connect them to the objectives, contents, and procedures of their programming (Kousoulas & Mega, 2009).

In the dance context this methodology is called “creative technique,” which let pupils choose the level of challenge in their skills, so teacher give premises in the presentation of the activities and students have to select an adequate and creative answer (Kassing & Jay, 2003). Nevertheless, this teaching model is too different than the traditionally used by teachers in this field of knowledge, known as direct instruction model or “style technique,” based on the explicit teaching of a skill-set using lectures or demonstrations to guarantee pupils motor efficacy (Kassing & Jay, 2003).

Along this line, there is little time in physical education sessions for interaction between teachers and students (González-Cutre et al., 2011) and sometimes there is an imbalance between the official curriculum and the physical-sporting practices that adolescents are interested in (Lim & Wang, 2009). That is why these classes are a good context to study and increase the quantity and quality of students’ motivation. More specifically, it is considered that the most adequate practices to analyze and increase motivation are dance and corporal expression as their application, both from the teachers’ and from the students’ viewpoint, has been more problematic despite these being activities that provide more possibilities to work and develop creativity (Watson, Nordin-Bates, & Chappell, 2012). These are activities that seek spontaneity, originality and individuality via movement (Lobo & Winsler, 2006), where success is connected to sensations, the spontaneous generation of motor actions, the adaptation to the immediate environment and to creativity (Torrents & Castañer, 2009). This is very different from the pragmatism of physical activity focused on achieving sporting skills.

However, there are several historical and cultural reasons that have kept dancing in a second place in the educational area (Pate & O’Neill, 2009; Sebire et al., 2013), as there are numerous stereotypes and negative connotations associated with this activity. It is considered as a mainly female activity, which has disqualified it as a subject to be included in educating male students and it has been relegated to the category of a complimentary or sectoral discipline (O’Neill, Pate, & Liese, 2011). Gender stereotypes have been socially created, as boys and girls are aware of the social expectations that have been formed around their participation in physical activity and sport. Whilst boys express a desire for physical contact sports, as core experiences to establish an acceptable masculine identity, girls fight for their sexual condition not to be ambiguous or contradictory to the social and cultural expectations linked to physical activity and sport (Chalabaev, Sarrazin, Fontayne, Boiché, & Clément-Guillotin, 2013; Chalabaev, Sarrazin, Trouilloud, & Jussim, 2009).

In this vein, it has been demonstrated that gender stereotypes in physical activity affect the perception of skill and thus the willingness to learn in physical education (Cairney et al., 2012). That is why, in contexts, such as dance, which is perceived as a female activity, boys have expressed reduced motivation to learn because they consider themselves to be less competent than girls to carry out this activity (Lyu & Gill, 2011; Shen, Chen, Tolley, & Scrabis, 2003).
Therefore, with this work, an attempt is made to generate knowledge that may guide the teachers’ intervention in dance classes. More specifically, the objective of this study is to discover the effectiveness of two dance teaching techniques, the creative enquiry technique and the direct instruction technique, on motivation (satisfaction of basic psychological needs, level of self-determination), the perception of usefulness, enjoyment and effort of physical education students. Likewise, we endeavored to analyze the gender differences in these psychological variables depending on the teaching technique used to guide and personalize the treatment of these contents in physical education.

METHOD

PARTICIPANTS

Seventy-one students participated in the study, both male (n = 32) and female (n = 39). The sample selection criterion used was that they should belong to a natural group, creating four experimental groups that belonged to four classes from the fourth year of compulsory Secondary Education (ESO), from two education centers in the Autonomous Community of Extremadura (Spain), aged between 14 and 16 years (M = 15.10 years, DT = .74). The sample included a participation rate of 88.8%, with nine invalidated questionnaires (11.3%) of a total of 80 initially collected.

Likewise, two physical education teachers participated in the study, who taught classes to the four selected groups, and so each teacher had to teach two groups. Teacher number 1 was a 27-year-old man who taught class 1 comprised of 20 male (n = 6) and female (n = 14) students, and class 2 comprised of 17 male (n = 12) and female (n = 5) students. On the other hand, teacher 2 was a 29-year-old woman who taught class 1 comprised of 20 male (n = 8) and female (n = 13) students, and class 2 comprised of 13 male (n = 6) and female (n = 7) students.

INSTRUMENTS

Basic psychological needs

To measure the students’ perception of satisfaction with the basic psychological needs, the version of the Basic Psychological Needs Measurement Scale (BPNES; Vlachopoulos & Michailidou, 2006) translated into Spanish (Moreno, Gonzalez-Cutre, Chillon & Parra, 2008) was used. It was adapted by modifying the wording of the initial sentence, transferring it to the content of dance and corporal expression. Thus, the instrument was preceded by the heading: “In dance and corporal expression classes in physical education...”, followed by 12 items (four per factor), which measure the satisfaction of autonomy (e.g., the way the exercises are carried out coincided perfectly with the way in which I want to do them), satisfaction of competence (e.g., I feel that I have progressed greatly with respect to the final objective that I had set out for myself), and the satisfaction of relatedness (I feel very comfortable when I carry out the exercises with the other companions). With respect to internal consistency, in this study, the different subscales showed an adequate Cronbach alpha both in the pre-test and in the post-test (pre-/post autonomy: .75/.82, pre-/post competence: .71/.74,
pre-/post relatedness: .80/.76). The answers to this instrument were carried out on a 5-point Likert type scale, where 1 corresponded to strongly disagree and 5 corresponded to strongly agree with the formulation of the question.

Level of self-determination

To evaluate the type of motivation of the students, the Questionnaire on Motivation in Dance and Corporal Expression (Amado et al., 2012) was used. This tool is headed by the statement: “I participate in dance and corporal expression classes in physical education...” followed by 20 items grouped into 5 factors that measure intrinsic motivation (four items, e.g., “Because they are enjoyment”), identified regulation (four items, e.g., “Because I can learn skills that I could use in other areas of my life”), introjected regulation (four items, e.g., “Because it is what I must do to feel good”), external regulation (four items, e.g., “Because it is well looked upon by the teacher and companions”) and amotivation “four items, e.g., But, I do not understand why we have to have Corporal Expression in Physical Education”). The reliability analysis reflected adequate internal consistency of this instrument at two moments of measurement (pre/post intrinsic motivation: .89/.81; pre/post identified regulation: .79/.81; pre/post introjected regulation: .70/.71; external regulation: .75/.76; pre/post amotivation: .72/.74). The answers to this instrument were carried out on a 5-point Likert type scale, where 1 corresponded to strongly disagree and 5 corresponded to strongly agree with the formulation of the question.

Usefulness

To measure the students’ perception of usefulness of dance in physical education, the adaptation of an instrument created by Fredericks and Eccles (2002) was used. This is comprised of 4 items that refer to the players’ perception of the benefits of sporting practice and to its importance in their lifestyle. The adaptation consisted of modifying the wording of certain terms of the items, transferring them to dance and corporal expression as curricular content of physical education. Thus, the items used were the following: “In general, to what extent do you believe the contents of dance and corporal expression you learn in Physical Education are useful?”; “For you, to what extent is it important to be good at dance and corporal expression?”; “Compared with the other contents delivered in Physical Education, to what extent do you find the dance and corporal expression block useful?” And, finally, “Compared with the majority of your other activities, to what extent is it important for you to be good at dance and corporal expression?” After analyzing the internal consistency of the instrument, an acceptable Cronbach alpha value was obtained (pre-/post: .92/.90). This instrument was answered on a 5-point Likert type scale, where 1 corresponded to “Nothing” 5 to “A lot.”

Enjoyment and effort

To evaluate the enjoyment and effort expressed by students with respect to dance as curricular content of corporal expression, the version of the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989) translated into Spanish and
adapted to physical education by Gutiérrez and Escartí (2006) was used. This instrument was adapted by modifying the wording of certain terms of the items, transferring them to dance and corporal expression. This instrument is comprised of four factors: enjoyment-interest (5 items), perception of competence (5 items), effort-importance (4 items), and stress-pressure (4 items), but to carry out this study, only two of these factors were selected: enjoyment-interest and effort-importance. Thus, the instrument was headed by the statement: “In the dance and corporal expression classes in physical education...,” followed by 9 items divided into two factors that measure enjoyment-interest (five items, e.g., “I have a lot of enjoyment dancing”) and effort-importance (four items, e.g., “I have made every effort dancing”). The internal consistency of the items was adequate both for enjoyment-interest (pre-/post: 87/.85) and for effort-importance (pre/post: .73/.67). The answers to this instrument were carried out on a 5-point Likert type scale, where 1 corresponded to strongly disagree and 5 corresponded to strongly agree with the formulation of the question.

PROCEDURE

All participants were treated in agreement with the ethical guidelines of the American Psychological Association with respect to consent, confidentiality and anonymity of the answers. Thus, before carrying out the research study, all involved were informed about the process that they were going to follow, placing emphasis on the fact that participation was voluntary and that the data would be dealt with in a confidential manner, obtaining informed consent from the directors of the centers and the students’ parents.

A quasi-experimental design was applied, with four natural groups from two school centers, developing a dance teaching program, applying the direct instruction technique with two groups and the creative enquiry technique with the other two groups. Thus, 4 experimental groups were formed. In the first group, teacher 1 used the creative technique and in the second group, instructive technique. In the third group, teacher 2 used the creative technique and in the fourth group, the direct instruction technique.

Firstly, the direct instruction technique, called “style technique” in the dance context, responds to the traditional methodology based on the repetition of a model, and therefore, it is a technique where pupils’ creativity is nullified. The teacher plans the session, demonstrates the exercises, corrects pupils’ performances and takes all didactic decisions (Kassing & Jay, 2003).

Secondly, the creative enquiry technique is a method which lets pupils to select the level of challenge in their skills, through the different options for the task performance presented by the teacher. The teacher plans a motor challenge, asking different alternatives in the performance, with the aim to help its creativity. The teacher in the tasks presentation, instead of showing the model of performance, asks questions or gives premises that require an original answer by pupils, whom must find a solution, choosing an individual and creative answer (Kassing & Jay, 2003).
Twelve sessions were developed with each one of the four groups, distributed over two 50-minute sessions each week, which took place in the gymnasium of the center. Dance contents taught in the sessions were referred to the “movement factors” (body, weight, space, time, intensity and interaction), developing two sessions from each content, according to the basic norms of the contemporary dance. The four experimental groups worked the same contents during the research, the difference between them was the technique used by the teacher.

Related to the application of the creative technique, teachers were trained during two teaching sessions about the characteristics of this type of teaching and its practical application, showing didactic examples of the creative technique regarding the technique traditionally used, the direct instruction technique. The application of the teaching sessions with the scholars was supervised by the main researcher with the aim to guarantee its correct application.

To compile data for the research, two measurements were carried out, pre- and post-test. The pre-measurement was carried out on each group after the teachers had given the 4 baseline sessions, which enabled us to analyze the students’ behavioral tendency, and the post-measurement was carried out after applying the teaching techniques in each group. The data collection consisted of providing students with a questionnaire, which was completed in the classroom without the presence of the teacher and in a climate that enabled them to concentrate without any type of distraction. They were given 20 minutes to complete it. The principal investigator was present at all times to clear up any doubts and make sure that the process was strictly followed.

**DATA ANALYSIS**

The SPSS 18.0 program was used to process the data. The K–S test was used for independent samples to observe the normality of the groups, the Rachas test for randomness and Levene’s test for homoscedasticity or equality between variances, verifying that the nature of the data was parametric.

Two analysis strategies were used: a preliminary analysis to observe the homogeneity of the sample and a main analysis to observe the effects of the intervention at intra-group level and at inter-group level. Insofar as the preliminary analysis is concerned, a multivariate analysis of variance was performed (MANOVA), including the group (direct instruction technique and creative enquiry technique) and gender, as independent variables, with the data collected in the pre-test, to know the homogeneity of the sample.

With respect to the main analysis to know the effects of the intervention, firstly, a t-test was used for samples related to each one of the groups (direct instruction technique and creative enquiry technique), to check the intra-group differences between the pre-test and the post-test, that is to say, to analyze what happened at psychological level in the application of each teaching technique separately between pre-test and post-test. Secondly, to analyze the inter-group differences between the pre-test and post-test, a two-factor repeated-measures analysis of variance was performed, with a two-level inter-subject factor (group) and another two-level intra-subject factor (moment of measurement), with the aim to compare...
the results of the application between both techniques, that is to say, one technique respecting the other.

Then, to observe the gender differences, a three-factor repeated-measures analysis of variance was performed, with two inter-subject factors (two-level gender and two-level group) and an intra-subject factor (two-level moment of measurement), with the aim to compare the interaction between teaching technique and pupils' sex between the pre-test and post-test. Later on, to analyze the effectiveness of the teaching techniques in the male gender, a two-factor repeated-measures analysis of variance was performed, with an inter-subject factor (two-level group) and an intra-subject factor (two-level moment of measurement). Finally, this same analysis was also performed for the female gender, with the purpose to know the effect of each technique in boys and girls.

RESULTS

PRELIMINARY ANALYSIS

We used MANOVA to examine the homogeneity of groups with the pre-test, including the group (direct instruction technique and creative enquiry technique) and the gender (male, female) as independent variables, and the perception of satisfaction of basic psychological needs, type of motivation, perception of usefulness, enjoyment and effort as dependent variables.

In the first place, with respect to perception of satisfaction of basic psychological needs, no significant differences were found at multivariate level in agreement with the group, $F(1, 69) = 2.26$, $p = .09$; $\eta^2 = .09$, or in agreement with gender, $F(1, 69) = 2.09$, $p = .15$; $\eta^2 = .09$, or in agreement with group–gender interaction, $F(3, 67) = .99$, $p = .40$; $\eta^2 = .04$.

Following this, with respect to the type of motivational regulation, the data analysis indicated statistically significant differences at multivariate level, in agreement with gender, $F(1, 69) = 2.68$, $p = .03$; $\eta^2 = .18$, whilst no significant differences were obtained with respect to the group, $F(1, 69) = .09$, $p = .99$; $\eta^2 = .01$, or with respect to the group–gender interaction, $F(3, 67) = .39$, $p = .85$; $\eta^2 = .03$. In this sense, the subsequent analysis of the inter-subject effects provoked by gender revealed significant differences in intrinsic ($p < .01$) and identified ($p < .01$) regulations, where the female gender recorded higher scores than the male gender.

Finally, focusing on the perception of usefulness, enjoyment and effort of the students toward the dance content in physical education, significant differences were found at multivariate level depending on the gender, $F(1, 69) = 6.33$, $p = .00$; $\eta^2 = .23$. These differences did not appear with respect to the group, $F(1, 69) = .51$; $p = .68$; $\eta^2 = .02$, or with respect to the group–gender interaction, $F(3, 67) = 2.36$; $p = .08$; $\eta^2 = .10$. The subsequent analysis of the inter-subject effects caused by the gender reveal significant differences in the perception of usefulness ($p < .05$), in enjoyment ($p < .001$) and in effort ($p < .001$), where the female gender recorded higher scores in all cases with respect to the male gender.

Therefore, after performing the preliminary analysis, it can be stated that the groups were homogenous prior to the intervention.
COMPARISON OF GROUPS BASED ON THE TEACHING TECHNIQUES USED

We used a t-test for related samples to examine the effects of the interventions within groups. The data analysis reflected that, from the pre-test to the post test, the students who received the creative enquiry technique suffered a decrease of identified regulation ($p < .05$) and of enjoyment ($p < .001$), contrasting with an increase in amotivation ($p < .001$). However, the students who received the direct instruction technique showed a decrease in all cases of identified regulation ($p < .001$), satisfaction of autonomy ($p < .001$), perception of usefulness ($p < .001$), enjoyment ($p < .001$) and effort ($p < .05$).

Thereafter, to examine the effects of the intervention between the two groups, comparing their post-test scores, a two-factor repeated-measures analysis of variance was performed, with an inter-subject factor (two-level group: direct instruction technique and creative enquiry technique) and an intra-subject factor (two-level moment of measurement: pre-test and post-test). The results of this analysis revealed the existence of significant principal effects of the moment of measurement, $F(1, 69) = 5.20, p = .00; \eta^2 = .54$. These effects were not found for the group, $F(1, 69) = .67, p = .79; \eta^2 = .13$, or for the group $\times$ moment of measurement interaction, $F(3, 67) = .83, p = .63; \eta^2 = .16$. Thus, the subsequent analyses of the effects caused by the measurement time or moment indicated the existence of statistically significant differences in the perception of autonomy in identified regulation, in perception of usefulness, in enjoyment and in effort, where a decrease occurred between the pre-test and the post-test, and also in amotivation, where the opposite occurred. Likewise, significant differences were found for the group $\times$ moment of measurement interaction (Table 1), in the students’ perception of usefulness with respect to the dance content in physical education, where the two teaching techniques expressed a decrease from the pre-test to the post-test. This was considerably more pronounced in the group of students who received the direct instruction technique.

GENDER DIFFERENCES BASED ON THE TEACHING TECHNIQUE USED

We then examined the existing differences in the dependent variables included in the study between four gender/group series. To this end, three-factor repeated-measures analysis of variance was performed, with two inter-subject factors (group and gender) and one intra-subject factor (moment of measurement). This analysis showed significant principal effects for gender, $F(1, 69) = 2.75, p = .00; \eta^2 = .48$, and for one moment of measurement, $F(1, 69) = 5.67, p = .00; \eta^2 = .65$. No significant effects were found for group, $F(1, 69) = .91, p = .57; \eta^2 = .23$, for gender $\times$ moment of measurement interaction, $F(3, 67) = .91, p = .57; \eta^2 = .23$, or for gender $\times$ group $\times$ moment of measurement interaction, $F(7, 63) = .87, p = .61; \eta^2 = .22$. The results indicated that, in general, female participants experienced worse responses than males in the perception of satisfaction of their basic psychological needs, in the level of self-determination, perception of usefulness of dance in physical education, in enjoyment and in effort. Likewise, these variables underwent
To determine if the psychological responses observed in the students toward the direct instruction technique and toward the creative enquiry technique, differed significantly in male students, a two-factor repeated-measures analysis of variance was performed, with an inter-subject factor (two-level group) and an intra-subject factor (two-level moment of measurement). A similar analysis was developed for female students. These analyses were performed to determine if the group × moment of measurement was dependent on the gender.

In this sense, insofar as the male gender is concerned, no significant principal effects were found for the group, $F(1, 69) = .79, p = .66; \eta^2 = .36$, of the moment of measurement, $F(1, 69) = 2.14, p = .07; \eta^2 = .61$, or of the group × moment of measurement interaction, $F(3.67) = 1.41, p = .25; \eta^2 = .50$. However, the results of our subsequent analyses revealed the existence of statistically significant differences in the perception of autonomy and in the perception of competence (Table 2), where boys who received the creative enquiry technique experienced a greater increase in these variables from the pre-test to the post-test, as compared with those who received the direct instruction technique.

With respect to the female gender, the analyses revealed only one significant principal effect of the moment of measurement, $F(1, 69) = 6.53, p = .00; \eta^2 = .77$. This effect was not found in the group, $F(1, 69) = 1.04, p = .44; \eta^2 = .35$, or in the

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**TABLE 1.** Repeated-Measures Analysis of Variance and Descriptive Statistics for the Dependent Variables Before and After Applying the Teaching Techniques in Both Groups

<table>
<thead>
<tr>
<th></th>
<th>Direct instruction technique ($n = 40$)</th>
<th>Creative enquiry technique ($n = 28$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Autonomy</td>
<td>3.52</td>
<td>.78</td>
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<tr>
<td>Competence</td>
<td>3.59</td>
<td>.79</td>
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<tr>
<td>Relatedness</td>
<td>4.32</td>
<td>.67</td>
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<tr>
<td>Intrinsic motivation</td>
<td>4.01</td>
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<tr>
<td>Identified regulation</td>
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<tr>
<td>Introjected regulation</td>
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<td>External regulation</td>
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<td>Amotivation</td>
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<td>Enjoyment</td>
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<td>.82</td>
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<tr>
<td>Effort</td>
<td>4.04</td>
<td>.80</td>
</tr>
</tbody>
</table>

**p < .01, *p < .05.**

changes in agreement with the time and moment of measurement, there being significant differences between pre-test and post-test.

To determine if the psychological responses observed in the students toward the direct instruction technique and toward the creative enquiry technique, differed significantly in male students, a two-factor repeated-measures analysis of variance was performed, with an inter-subject factor (two-level group) and an intra-subject factor (two-level moment of measurement). A similar analysis was developed for female students. These analyses were performed to determine if the group × moment of measurement was dependent on the gender.

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<table>
<thead>
<tr>
<th></th>
<th>Male gender</th>
<th></th>
<th>Female gender</th>
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<th>F</th>
<th>( \eta^2 )</th>
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<tbody>
<tr>
<td></td>
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<td>Creative enquiry technique</td>
<td></td>
<td>Direct instruction technique</td>
<td>Creative enquiry technique</td>
<td></td>
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</tr>
<tr>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
<td>Post-test</td>
<td>( M \pm SD )</td>
<td>( M \pm SD )</td>
</tr>
<tr>
<td>Autonomy</td>
<td>3.44 ± .99</td>
<td>2.87 ± 1.02</td>
<td>3.32 ± .62</td>
<td>3.47 ± .61</td>
<td>3.56 ± .67</td>
<td>3.20 ± .79</td>
<td>3.89 ± .64</td>
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<tr>
<td>Competence</td>
<td>3.75 ± .90</td>
<td>3.75 ± .63</td>
<td>3.53 ± .51</td>
<td>4.00 ± .62</td>
<td>3.51 ± .73</td>
<td>3.54 ± .58</td>
<td>3.75 ± .38</td>
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<tr>
<td>Relatedness</td>
<td>4.25 ± .63</td>
<td>4.21 ± .57</td>
<td>4.22 ± .62</td>
<td>4.28 ± .63</td>
<td>4.35 ± .71</td>
<td>4.31 ± .57</td>
<td>4.29 ± .61</td>
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<tr>
<td>Intrinsic motivation</td>
<td>3.71 ± 1.25</td>
<td>3.39 ± 1.16</td>
<td>3.60 ± .78</td>
<td>3.62 ± .65</td>
<td>4.17 ± .74</td>
<td>4.01 ± .54</td>
<td>4.52 ± .52</td>
</tr>
<tr>
<td>Identified regulation</td>
<td>3.41 ± .97</td>
<td>3.25 ± 1.05</td>
<td>3.33 ± .77</td>
<td>3.25 ± .80</td>
<td>3.82 ± .68</td>
<td>3.36 ± .54</td>
<td>4.08 ± .57</td>
</tr>
<tr>
<td>Introjected regulation</td>
<td>2.98 ± .67</td>
<td>2.91 ± .94</td>
<td>3.12 ± .89</td>
<td>3.30 ± .89</td>
<td>3.22 ± .78</td>
<td>3.19 ± .76</td>
<td>3.17 ± 1.01</td>
</tr>
<tr>
<td>External regulation</td>
<td>3.39 ± .69</td>
<td>3.19 ± .90</td>
<td>3.30 ± .94</td>
<td>3.35 ± .93</td>
<td>3.19 ± .95</td>
<td>3.02 ± .66</td>
<td>3.27 ± .92</td>
</tr>
<tr>
<td>Amotivation</td>
<td>1.84 ± .96</td>
<td>2.27 ± 1.16</td>
<td>1.93 ± .96</td>
<td>2.43 ± .86</td>
<td>1.68 ± .86</td>
<td>1.88 ± .71</td>
<td>1.37 ± .40</td>
</tr>
<tr>
<td>Usefulness</td>
<td>3.71 ± .99</td>
<td>3.14 ± 1.34</td>
<td>3.18 ± .71</td>
<td>3.15 ± .77</td>
<td>3.84 ± .78</td>
<td>3.28 ± .58</td>
<td>4.08 ± .50</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>3.80 ± 1.14</td>
<td>3.39 ± 1.26</td>
<td>3.86 ± .84</td>
<td>3.61 ± .65</td>
<td>4.58 ± .42</td>
<td>4.07 ± .69</td>
<td>4.67 ± .38</td>
</tr>
<tr>
<td>Effort</td>
<td>3.66 ± 1.12</td>
<td>3.55 ± .70</td>
<td>3.70 ± .73</td>
<td>3.76 ± .85</td>
<td>4.24 ± .50</td>
<td>3.81 ± .69</td>
<td>4.19 ± .59</td>
</tr>
</tbody>
</table>

**p < .01, *p < .05.**
group × moment of measurement interaction, \( F(3, 67) = .38, p = .96; \eta^2 = .17. \) Subsequent analyses expressed the existence of statistically significant differences in the perception of autonomy, intrinsic motivation, identified regulation, perception of usefulness of dance in physical education, in enjoyment and in effort, where the girls who received the creative enquiry technique suffered a decrease in these variables between the pre-test and the post-test.

**DISCUSSION**

The objective of this study was to find out the effectiveness of two dance teaching techniques, the creative enquiry technique and the direct instruction technique, on motivation (satisfaction of basic psychological needs, level of self-determination), the perception of usefulness, enjoyment and effort of the physical education students. Likewise, it sought to analyze the gender differences in the psychological variables addressed based on the teaching technique used, to guide and personalize the treatment of these contents in physical education.

As a starting point, it must be highlighted that the research was developed within an extremely complex context, as the content of corporal expression focused on dance is not normally included in physical education (Pate & O’Neill, 2009; Sebire et al., 2013). This occurs because dance has not been recognized traditionally as a learning matter, the training of teachers has been incomplete, there has been a lack of a specific dance curriculum, a lack of adequate spaces, means and bibliographic material, and there has also been gender discrimination (Paulson, 1993). Furthermore, another important issue that has to be taken into account is pupils’ age. The adolescence is a crucial period for the settlement of cultural patterns and the determination of habits of life for the adult age (Alsaker & Flammer, 2006), being this aspect the reason why authors decided to deal with the study in this age.

Along this line, during the analysis of the results found after conducting this study, we were able to see that, in general, the teachers did not manage to improve the students’ motivation with either of the two teaching techniques. However differences were observed in the application of both techniques, thus the direct instruction technique caused a decrease in identified regulation, perception of autonomy, perception of usefulness, enjoyment and effort, whilst the creative enquiry technique caused a decrease in identified regulation and in enjoyment, and an increase in amotivation. Therefore, we were able to verify that 12 dance teaching sessions were not sufficient in time to increase the students’ motivation (Ntoumanis, Barkoukis, & Thogersen, 2009; Tessier, Sarrazin, & Ntoumanis, 2010), probably because increasing self-determined motivation takes time and requires incorporating in the self the reasons to engage in a behavior (La Guardia & Ryan, 2002). In addition, from the students’ point of view, the school setting is a controlling one because school attendance is compulsory, curriculum content and learning activities are not fun, and student work is graded (Brophy, 1999; Lim & Wang, 2009).

With regard to the results found that referred to amotivation, we would like to indicate that the increase of pupils’ amotivation in both groups after the application of both teaching techniques might be explained by the characteristics of the dance
content, where the goal is less defined, which can help the perception of incompetence because learning context can be perceived as less structure, predictive and consistent (Skinner & Edge, 2002), which would lead to a greater amotivation. Nevertheless, it is important to note that data were only significant in the creative enquiry technique, maybe because it needs to be applied with a higher length to promote a significant change in pupils’ motivation, because pupils’ efficacy is more unclear with this teaching technique due to the less models of references that can give security and perception of competence, contrariwise with direct instruction technique (Runco, 2008; Sanchez-Ruiz, Hernandez-Torrano, Perez-Gonzalez, Batey, & Petrides, 2011).

However, the results found based on student gender, enables us to find significant differences between men and women, which advise using different methodological alternatives for each gender. Thus, these results expressed how male students who received the dance teaching sessions under a creative enquiry methodology showed an increase in perception of autonomy and in perception of competence between the pre-test and the post test, with respect to the students belonging to the direct instruction methodology group. Based on these results, it has been demonstrated that in physical education, boys are more attracted by tasks with high cognitive participation than girls (Chen & Darst, 2001; Halpern, 2000), hence a teaching technique that focuses more on the cognitive participation of the students may cause positive consequences on the male gender.

With respect to the female gender, the female students who received dance teaching sessions according to the creative enquiry technique, reflected a decrease in perception of autonomy, intrinsic motivation, identified regulation, perception of usefulness, enjoyment and effort, with respect to those other female students who received the direct instruction technique. In this sense, the consideration of dance as a largely female content (O’Neill et al., 2011) may lead to the female students feeling the need to show their competence in these activities and thus stand out with respect to the males, who have traditionally accepted and undertaken sporting skills better (Chalabaev et al., 2013; Gentile et al., 2009). Consequently, perhaps female students express worse psychological results using a teaching technique where priority is not given to competence, as is the case of the creative enquiry technique, because they may prefer a direct instruction technique where the aim is to repeat models established by the teacher and attain certain skills in execution.

On the other hand, in spite of the difficulty to study gender differences in creativity (Baer & Kaufman, 2008), some research studies carried out on divergent thinking and gender have indicated that there may be differences between both genders (Stoltzfus, Leigh, Vredenburg, & Thyrum, 2011). Thus, there are authors who point out that women can exceed men in creative capacity (Reuter et al., 2005; Wolfradt & Pretz, 2001), whilst in other studies men exceeded women (Dollinger, Dollinger, & Centeno, 2005). Therefore, despite the need for more research studies to clarify how men and women differ in their creative responses, these data are interesting because in our case, it could indicate that gender has an impact on the psychological responses expressed toward both teaching techniques. In fact, there is evidence of
social influences that may negatively affect the development of creativity in women, above all in the youth stage, where the social role of women may limit the time and energy available to pursue creative self-expression (Reis, 1999; Simonton, 2000).

In short, we base ourselves on the fact that the corporal expression content focused on dance in physical education is difficult to learn and complicated to apply. Thus an attempt is made to offer a methodological procedure that will solve the problem, verifying, after 12 sessions, the difficulty in motivating students toward these contents. Secondly, the analysis by gender enables us to find methodological guidelines, because, seemingly, the creative enquiry technique works better with the male gender, whereas the use of a direct instruction technique appears, initially, to be more adequate with the female gender.

Thus then, the main conclusion drawn is that to apply the corporate expression content focused on dance, more teaching sessions are required, because it is complicated to motivate students and furthermore, treatment by gender is very important as the responses are very different in girls and boys. Thus, physical education teachers must devote more time to and place more importance on this compulsory content, considering that there is a methodological alternative depending on the gender.

After performing the study, certain limitations that have arisen must be taken into account. First, the teaching techniques were applied with a limited number of centers and students, thus the results of this study cannot be generalized to other types of teaching centers and students with different physical and learning skills. In addition, future studies could aim to replicate this work, using more teachers with their respective groups of students with the aim to better understand sex differences in the application of both techniques planned in this work, a longer period of application of the teaching techniques, as well as a comparative regarding age, with the aim to know if there are differences in the motivational processes lead through the application of both teaching techniques showed between different group of ages. The measurement should also be taken several times during the process to observe the evolution of the dependent variables included and guide future teaching activities.

Therefore, when developing a teaching program to increase motivation in physical education, and even more so if gender stereotypes have been forged around the contents in question, as is the case of dance and corporal expression, it is important to bear in mind the students’ gender to be able to attain the desired effects, applying the program to both genders equally. Likewise, the methodology considered to be appropriate to teach these contents is one where direct instruction is alternated, by establishing reference models for the students, with creative enquiry, with the cognitive participation of the learners, so that boys become cognitively involved in the teaching-learning process and girls attain satisfaction in their perception of competence, and thus both groups will feel motivated during the development of the sessions.

REFERENCES


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AUTHOR NOTE

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