

Mood states when playing alone or in cooperation: two unequal motor and affective experiences

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Título: Estados de ánimo al jugar en solitario o en cooperación: dos vivencias motrices y afectivas desiguales.

Resumen: Este estudio analizó el efecto de las variables: tipo de juego (en solitario o cooperativo), competición, género, tipo de agrupación del alumnado e inicio-final de la sesión sobre los estados de ánimo de alumnado universitario. Participaron 201 estudiantes universitarios de Educación Física. Tras recibir una formación inicial sobre estados de ánimo, los participantes realizaron 2 sesiones con juegos cooperativos y 2 en solitario. Al inicio y final de cada sesión se rellenó la escala POMS. Los datos se analizaron mediante ecuaciones de estimación generalizadas. Entre los principales hallazgos destacamos que los estados de ánimo positivos aumentan significativamente al aplicar juegos cooperativos, con competición. Los estados de ánimo negativos están más presentes en los juegos en solitario, sin competición, al ser practicados por los hombres, y al estar organizados en grupos separados. Todo ello contribuye a conocer la aportación del juego en la formación de futuros docentes de una educación física moderna en la cual se pretenda promover aspectos tan importantes como el bienestar socioemocional y la coeducación.

Palabras clave: Educación física; formación superior; afectividad; dominios de acción motriz; competición; género; coeducación.

Abstract: This study analyzed the effect of the variables: game type (individual or cooperative), competition, gender, students' association type and beginning-end of the session on the university students' moods. 201 Physical Education college students participated. After having received an initial instruction concerning moods, participants executed 2 sessions involving cooperative games and 2 individual games. The POMS scale was filled in both at the beginning and at the end of each session. The data were analyzed using generalized estimating equations. Among the main findings, we can point out that positive emotional states increase significantly when cooperative games are applied, with competition. Negative moods are more present in individual games, with no competition, when practiced by men and when they are organized in separate groups. All these factors contribute towards knowing the influence of play on the training of the future teachers of a modern physical education, in which there is the intention of promoting such important aspects as socioemotional well-being and co-education.

Keywords: Physical Education; higher education; affectivity; motor action domain; competition; gender; co-education.

Introduction

Physical education (PE) is an emerging educational discipline that can foster the acquisition of key skills for Compulsory Secondary Education (ESO), such as those relating to respect for others, cooperation, solidarity, dialogue, discipline, teamwork, equal rights, conflict resolution, inter alia (BOE State Gazette, 2015; Kirk, 2013; Pucher, Boot, & De Vries, 2013).

ESO is the principal regulated professional opportunity for graduates in sports science. For this reason, we need to foster educational research and experiences that contribute to their future career, as proposed in this study. This study seeks to make advances in this direction, seeing motor play as one of the principal educational tools available to the physical education teacher (Lagardera, 2007; Lavega, 2009).

University sports science students should know that through motor play, physical education (PE) can originate an extraordinary impact on the development of the students' personalities. Modern PE abandons traditional mechanistic conceptions, where education in decontextualised motor skills lacking any meaning reigns (Ennis, 2014; Parlebas, 2009). The adequate use of motor play fosters the acquisition of global learning, where the students test how they relate to other people, manage emotions or take intelligent decisions (Navarro, & Trigueros, 2009).

According to the BOE State Gazette (2015), PE should contribute to the development of educational skills in such necessary areas as emotional wellbeing. Therefore, the new generations of PE teachers in secondary schools should master the use of motor play to educate in basic skills and meet key aspects such as education in affectivity, often forgotten in traditional PE (Lavega, Filella, Agulló, Soldevila, & March, 2011; Peña, & Canga, 2009). Consequently, one of the first issues to tackle is the knowledge of the educational effects that may be caused by the different types of motor play (e.g. cooperative, solitary, opposition games) on such relevant areas as mood states or emotions.

Scientific advances in different areas of knowledge note the importance that should be given to affectivity in schools, often marginalised by traditional educational trends that promote memory-based and analytical learning as opposed to creative and sensorial learning (e.g. Fernández-Berrocal, & Ruiz, 2008; Goleman, 1996; Salovey, & Mayer, 1990).

From an innovative perspective, every PE teacher should consider that when students take part in any motor play, they are unitarily putting their whole personality into action, systematically activating the different dimensions of their motor behaviour, such as organic, cognitive, relational and affective or emotional (Lagardera, & Lavega, 2004). In this way, PE is seen as education in motor behaviours, where it is possible to educate and impact on the different dimensions of the student's personality (Lagardera, 2007). Consequently, PE plays a relevant role by acting in a trans-disciplinary way on

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the acquisition of key skills for life in society (Parlebas, 2014).

In this new approach to PE, as well as knowing these basic life skills, the teacher must master the specific skills of the field of PE. The expertise of the PE educator could be distilled into the ability to apply the different types of play correctly with the aim of educating the motor behaviours of their students (Lavega, 2009). To achieve this, motor action theory (Parlebas, 2001) identifies two main families of motor experiences (or motor action domains): psychomotor games and sociomotor games.

Psychomotor games are practices with no motor interaction, where the person tests themselves to overcome the motor challenge posed, with no one helping them or hindering them in motor terms (Parlebas, 2001); it is a scenario that places the student in a material environment, where the difficulty lies in running distances, overcoming obstacles, controlling their body in unusual situations or handling objects. These games are very good for identifying one's own strengths and limitations, and for working on consistency, proprioception and the automation of responses (Lagardera, & Lavega, 2004; Parlebas, 2001).

By contrast, through sociomotor games, the students have social experiences of a social nature as any motor response involves an instrumental motor interaction, corresponding to overcoming a challenge with team-mates (cooperative domain), opponents (opposition domain) or team-mates and opponents (cooperation-opposition domain) (Etxebeste, 2012). In this way, it is a favourable environment for educating in aspects referring to interpersonal relationships such as respect, empathy, teamwork, solidarity and group consensus (Lagardera, & Lavega, 2004; Parlebas, 2001).

Of the various motor action domains of a sociomotor nature, cooperation merits special attention. Previous studies have noted that the internal logic or properties that the rules of cooperative games contain guide participants towards mutual help, sharing a positive motor interaction that activates the group consensus, shared strategies, interpersonal relationships, sacrifice, generosity, empathy and sacrifice for others (Lavega, 2009; Lavega, Lagardera, March, Rovira, & Coelho, 2014; Rovira, López Ros, Lagardera, Lavega, & March, 2014). It is a very interesting family for the transformation of motor conflicts in primary school students (Sáez de Ocáriz, & Lavega, 2013); experiencing intense positive emotions in secondary school students (Durán, Lavega, Salas, Tamarit, & Invernó, 2015), and in university students (Lavega, Alonso, Etxebeste, Lagardera, & March, 2014).

Another aspect that is very often present in the traditional PE focus has been an inadequate use of competition, i.e. the abusive imitation of the sports model geared towards the identification of success and failure, victory and defeat (Lagardera, 2009). In the educational context, knowing how to compete is a learning to be taken into consideration, as everyone should know how to win and

lose with the aim of bettering themselves in the face of new challenges (Cumming, Smoll, Smith, & Grossbard, 2007).

The internal logic of competitive motor games requires participants to manage the emotional outburst caused by this competitive confrontation (Bisquerra, 2011; Parlebas, 2001), which provokes a difference in the emotional difference between winners and losers (Lavega et al., 2014). However, the almost exclusive use of competition-based educational models can lead to the atmosphere in physical education classes being critical for the development of positive affectivity during motor practice, especially for women (Derry, & Phillips, 2004).

If the students do not have options to taste victory once in a while, it is probable that this motor experience will not contribute to positively educating their affective wellbeing (Parlebas, 2009). It is possible that students do not share the same type of motivation towards competition (intrinsic or task-oriented motivation, or extrinsic or ego- or result-oriented motivation) (Cumming et al., 2007); however, it would be appropriate if they could all benefit from games with the presence or absence of competition (Etxebeste, Del Barrio, Undargarin, Usabiaga, & Oiarbide, 2014).

From the gender perspective, the disproportionate use of competition is one of the factors that explain the lesser interest of girls in participating in these PE classes (Beltrán, Devís, Peiró, & Brown, 2012; Dyson, 1995; Graham, 1995). Therefore, it is necessary to promote an inclusive and fair PE that offers equal opportunities to both genders, avoiding sexist stereotypes of discrimination between girls and boys (Pelegrín, León, Ortega, & Garcés, 2012; Torres, 2005). Previous studies have noted that by participating in different types of games, men experience more intense emotions compared with women (Lavega et al., 2014) and unequal mood states (Etxebeste et al., 2014). This emotional behaviour is accentuated when losing in competitive games, where men express more intense negative emotions than women do (Lavega et al., 2014). These aspects are key to fostering coeducation programmes that ensure affective wellbeing in both males and females (Gillison, Simon, & Standage, 2012; Smith, Lounsbury, & McKenzie, 2014).

Learning to share motor relations (in different types of games) and to accept the result of success or failure in competitive games is a good way for boys and girls to learn to live together in a climate of affective wellbeing (Smith et al., 2014; Torres, 2005; Valdivia, Sánchez, Alonso, & Zagalaz, 2010).

Based on the theoretical frame of reference, this research examined the effect of the variables of motor action domain (psychomotor and cooperative play), competition (games with and without competition), gender (men and women); student grouping (groups of the same gender or mixed groups) on the different mood states, and the start-end of the session (pre-test, post-test) distilled in the factors identified by the *Profile of Moods State* (POMS) instrument: Overall Score; Stress-Anxiety, Depression-Dejection, Anger-Hostility, Fatigue-Immobility and Vigour-Activity.

In light of the findings of previous research in relation to the effect of the variables studied on emotional experience (e.g. Lavega et al., 2011; Lavega, Alonso et al., 2014; Rovira et al., 2014; Sáez de Ocáriz, & Lavega, 2013), we put forward the following hypotheses:

- a) The intensity of positive mood states will be especially favoured by cooperative games, with competition, by organising the students into mixed groups.
- b) The intensity of negative mood states will increase in solitary games, among men and primarily when the students are organised in groups of the same gender.

Method

This study followed a quasi-experimental design, as the sample was selected intentionally (not randomly). It was an educational experience that was conducted in the area of higher education with first-year students on a sports sciences degree course.

Participants

These were 201 students studying the INEFC (University of Lleida) motor game theory and practice subject during the 2011-2012 and 2012-2013 academic years, 75 men (79.8%) and 19 women (20.2%), aged between 18 and 33 ($M = 20.24$, $SD = 2.55$), the lost values were rejected (15.42%). Of these participants, 163 (81.9%) had been playing sport regularly for years (they had a sports history), while 38 (18.81%) had no sports history.

Before the start of the sessions, all the participants gave their consent to participate voluntarily in this emotional physical education educational experience. In addition, the research was approved by the University of Lleida Ethics Committee.

Instrument

The POMS Scale by McNair, Lorr, & Droppleman (1971) was chosen to rate the students' mood states. Since this experience was included in the academic programme of a subject, for our study we decided to use a reduced version of the POMS questionnaire that had been adapted and validated for Spanish (Fuentes, Balaguer, Meliá & García, 1995). The items were rated from 0 (nothing) to 4 (a lot) and arranged into six factors that recorded the following internal consistency values (Cronbach's alpha): Overall Score (OS) ($\alpha = .82$); Stress-Anxiety (SA) ($\alpha = .83$), Depression-Dejection (DD) ($\alpha = .80$), Anger-Hostility (AH) ($\alpha = .84$), Fatigue-Immobility (FI) ($\alpha = .86$) and Vigour-Activity (VA) ($\alpha = .85$).

Procedure

An initial training session was held to explain the conditions of participation and to introduce POMS. In the data collection phase, the students took part in sixteen games

(four games per session) divided over four sessions, two with psychomotor games and two with cooperative games, which in turn had a session with competition (they won or lost) and another without any competition (nobody lost, there was no final score). The sessions lasted 1.5 hours (15 minutes per game).

The teacher only intervened to explain the games and answer any queries about the rules (maintaining the same type of interaction with the different groups of students). Nowhere was there any type of emotional stimulation shown (encouragement in the face of failure or praise for success), so as not to condition their affective answers. After an initial warm-up (which was always the same for every session), the people taking part completed the POMS questionnaire (pre-test). At the end of the fourth game in each session, they answered the same questionnaire again (post-test). After this, the questionnaires were collected and the session and the type of mood states they had experienced were discussed.

Data analysis

The data were analysed following a generalised linear model based on generalised estimating equations (GEE), interchangeable correlation Gaussian family, because the data of the variable dependent on mood states did not follow a normal distribution (according to the Kolmogorov-Smirnov test) and they were also correlated variables since everyone supplied us with a large amount of data. The results of the interactions between the variables were accompanied by the size of the effect based on Cohen's d , adapted by Wolf (1986) for repeated measurements.

The effects of five independent variables were studied: a) the type of motor interaction (psychomotor games, cooperative games); b) result (with competition, without competition); c) the session phase (start or pre-test, end or post-test); c) gender (female, male); and d) gender grouping (same gender group, mixed gender group) regarding the intensity of the dependent variables relating to the six mood state factors (MS): MS^{Negative} : Overall Score (OS); Stress-Anxiety (SA), Depression-Dejection (DD), Anger-Hostility (AH), Fatigue-Immobility (FI), and MS^{Positive} : Vigour-Activity (VA). SPSS v.19.0 software was used.

Results

It was decided to describe the results according to the effect on the different mood states factors (dependent variable) of each of the independent variables: a) type of game (psychomotor and cooperation); b) competition (with or without competition); c) the session phase (start or pre-test and end or post-test); d) gender (female and male); and e) gender grouping (same gender, mixed gender) (Table 1).

Since the POMS questionnaire identifies six factors, the results referring to mood states *with negative orientation* (MS^- : OS, SA, DD, AH, FI) are described first, followed by the *mood states with positive orientation* (MS^+): VA.

Table 1. Effects of the generalised estimating equations linear model.

Factor	Type III			95% Wald confidence interval	
	Wald Chi-Square Test	gl	<i>p</i>	Lower	Higher
Stress-Anxiety (SA)					
competition * start_end	29.906	1	< .001	-1.327	-.627
Depression-Dejection (DD)					
competition * domain	15.455	1	< .001	-.813	-.272
start_end * gender	10.495	1	< .001	.154	.624
Anger-Hostility (AH)					
competition * gender	7.263	1	.007	-1.088	-.172
start_end * gender	4.236	1	.040	.021	.870
Vigour-Activity (VA)					
Competition	32.304	1	< .001	1.500	2.564
Domain	5.995	1	.014	-2.536	-.754
start_end * gender grouping	9.110	1	.003	-1.387	-.295
Fatigue-Immobility (FI)					
competition * gender	5.013	1	.025	-1.247	-.083
competition * domain	5.146	1	.023	-1.090	-.080
start_end * domain	7.691	1	.006	-1.112	-.191
gender grouping * domain	6.382	1	.012	.209	1.652
Overall Score (OS)					
competition * gender	5.381	1	.020	-2.830	-.238
competition * domain	25.943	1	< .001	-4.700	-2.088
start_end * gender	6.010	1	.014	.283	2.543
start_end * domain	17.730	1	< .001	-3.890	-1.419
gender grouping * domain	6.230	1	.013	-2.811	2.844

Effects of the type of game on negative MS

The impact of *psychomotor and cooperative* games on mood states was unequal when considering the *start and end* of the sessions (*p* < .001). At the start of the sessions, no differences between the motor action domains were observed (*p* > .05). However, at the end, increases to FI and OS in psychomotor games were observed compared with cooperation games (Table 2). Although there were no differences in other aspects of the MS, a clear trend was observed for psychomotor games to lead to higher values than cooperative games.

Table 2. The impact of psychomotor and cooperative games on mood states.

Factor	Psychomotor Games		Cooperation Games		<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Stress-Anxiety						
Start	6.47	.258	6.16	.250		
End	6.98	.275	7.37	.282		
Same Gender	6.86	.305	6.87	.326		
Mixed gender	6.60	.249	6.66	.227		
With competition	6.83	.278	7.29	.284		
Without competition	6.63	.250	6.24	.235		
Depression-Dejection						
Start	.92	.109	1.01	.124		
End	1.25	.124	.94	.124		
Same Gender	1.22	.151	.89	.175		

Mixed gender	.95	.100	1.06	.115		
With competition	.98	.113	1.14	.129		
Without competition	1.20	.119	.81	.119	.021	3.27
Anger-Hostility						
Start	2.91	.206	3.14	.248		
End	3.72	.246	3.41	.249		
Same Gender	3.40	.284	2.93	.309		
Mixed gender	3.23	.210	3.63	.252		
With competition	3.17	.235	3.69	.243		
Without competition	3.45	.218	2.87	.266		
Fatigue-Immobility						
Start	3.85	.278	3.68	.230		
End	4.38	.299	3.56	.253	.030	2.96
Same gender	4.78	.375	3.82	.314	.035	2.77
Mixed gender	3.46	.237	3.43	.208		
With competition	3.87	.269	3.67	.246		
Without competition	4.36	.326	3.57	.250	.040	7.71
Overall score						
Start	105.61	.637	105.34	.678		
End	107.68	.649	104.76	.692	.002	4.35
Same gender	107.37	.81	104.40	.870	.012	3.51
Mixed gender	105.92	.571	105.70	.663		
With competition	105.56	.649	105.65	.699		
Without competition	107.74	.679	104.44	.708	< .001	4.75

The interaction of the *game type and student grouping* variable (same-gender and mixed groups) reflected differences (*p* <

.013). When the participants were grouped by the same gender, higher OS and FI values were recorded in psychomotor games compared with cooperation games. The same trend was observed in AH, although it was not significant ($p = .425$). However, no trend was observed in SA and DD. When the players participated in mixed groups, no differences in the MS⁻ were observed in relation to the type of game (Table 2).

There were differences ($p < .001$) in the *type of game and result* interaction. When there was no competition, psychomotor games recorded more intense values in OS, DD and FI compared with cooperative games. When there was competition, the EA⁻ did not display any differences between psychomotor and cooperative domains, although a trend towards increased MS⁻ was observed in cooperative games compared with psychomotor games (Table 2).

Effects of the result on negative MS

The *result and start and end* interaction of the sessions displayed differences ($p = .007$). At the end of the sessions, games with competition were observed to present higher SA values ($M = 7.63$, $SD = .219$, $p < .001$, $d = 4.79$) compared with sessions without competition: SA ($M = 6.62$, $SD = .202$). When the *result and gender* interaction was analysed, there were found to be differences ($p = .020$). When competing, men recorded higher values compared with women (Table 3).

Table 3. Impact of the result on mood states.

Factor	Men		Women		<i>p</i>	<i>Cohen's d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Stress-Anxiety						
With competition	7.35	.288	6.77	.275		
Without competition	6.60	.232	6.27	.257		
Depression-Dejection						
With competition	1.53	.134	.59	.095	.001	8.09
Without competition	1.43	.132	.58	.102		
Anger-Hostility						
With competition	4.38	.262	2.48	.198	.001	8.18
Without competition	3.79	.219	2.53	.269		
Fatigue-Immobility						
With competition	4.4	.266	3.14	.245	.001	4.92
Without competition	4.27	.275	3.67	.316		
Overall score						
With competition	107.73	.725	103.48	.585	.001	6.45
Without competition	107.44	.717	104.73	.661		

Effects of gender on negative MS

The *gender and start and end* interaction of the sessions displayed differences ($p = .014$). Men recorded higher values at the end compared with the start (Table 4). Similarly, a trend in increased MS⁻ was observed in women at the end of the session.

Table 4. Impact of gender on mood states.

Factor	Start		End		<i>p</i>	<i>Cohen's d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Stress-Anxiety						
Men	6.55	.260	7.4	.260	.001	3.26
Women	6.09	.248	6.95	.302		
Depression-Dejection						
Men	1.32	.125	1.64	.125	.003	2.56
Women	.62	.098	.55	.093		
Anger-Hostility						
Men	3.70	.232	4.46	.243	.001	3.19
Women	2.35	.209	2.66	.248		
Fatigue-Immobility						
Men	4.22	.253	4.45	.273		
Women	3.31	.256	3.49	.282		
Overall score						
Men	103.86	.689	108.31	.699	.001	2.07
Women	104.09	.580	104.13	.620		

Effects of independent variables on positive MS (VA)

The sessions based on psychomotor games revealed lower values ($M = 8.66$, $SD = .314$, $p < .001$, $d = 6.56$) compared with cooperative sessions ($M = 10.52$, $SD = .249$). When there was competition, the final VA values were much higher ($M = 10.73$, $SD = .248$, $p < .001$, $d = 8.89$) than when there was no competition ($M = 8.46$, $SD = 2.62$). Finally, differences were found ($p < .001$) in the group gender and session phase interaction. At the end of the session, same-gender groups presented higher VA values ($M = 10.21$, $SD = .282$, $p < .001$, $d = 4.59$) compared with those of the mixed groups ($M = 8.97$, $SD = .257$).

Discussion

This research examined the effect of the type of game, result, gender, student grouping type at the start-end of the session on the mood states of university students. Despite the experience being run over four sessions, the study confirms the ability that games have to change immediate mood states; in the same session, significant differences were observed depending on the variables studied.

Cooperating or participating alone and mood states

The type of games (psychomotor and cooperation) aroused different MS in the participants. Cooperative games increased the MS⁻ to a lesser extent and increased the MS⁺ (VA) more intensely in comparison with psychomotor games. These results confirm the findings obtained by other research projects, where it is noted that people's affective states (university, secondary school, primary school students) change more intensely when the play situations demand interaction with other people (be they team-mates and/or opponents) (e.g. Duran et al., 2015; Lavega, 2009; Lavega, Alonso et al., 2014).

University students who are future educators in the field of PE should recognise the potential of cooperative games in PE as an educational strategy to foster the socio-emotional wellbeing development of their students (Hromek, & Roffey, 2009; Lavega, Lagardera et al., 2014).

Competition and mood states

Both in psychomotor games and in cooperative games, the presence of competition increases the intensity of positive mood states and fosters a lack of differences between negative mood states among these games; this inequality does exist in negative mood states when there is an absence of competition among these games. We believe that this reason is due to two possible causes: a first one referring to the internal logic of the game (structural cause) and the other one to the subjective logic of the participants (Parlebas, 2009).

Implicit in the internal logic of psychomotor games is carrying out cyclical game sequences, with little variety of responses. For example, when doing the long jump, once the person has explored the situation, if they want to improve their effectiveness, they must repeat the run, the spring, the jump and the landing in a programmed way time and time again. The main incentive that they have here is to improve their record; it is difficult for this intrinsic task-oriented motivation (Duran et al., 2015; Ntoumanis, 2001; Sáez de Ocáriz & Lavega, 2013) to occur when solitary play is not accompanied by some degree of competition. By contrast, despite there also being cyclical situations in cooperative games (e.g. skipping simultaneously in groups of four), there is a greater repertoire of circumstances associated with combinations in the type of interaction on which these people can agree (try a different way of jumping, hold hands, jump and do a half turn, jump in and out at the same time) (Lavega, 2009).

Also, in the case of introducing competition, it must be used appropriately without fostering the marginalisation of the participants, as this could reduce the enjoyment and interest in the activity (e.g. Beltrán et al., 2012; Cumming et al., 2007; Duran et al., 2015).

Besides this, other subjective aspects of the participants should be considered. They are students who, in the majority (more than 80%), have a sporting background, i.e. they are used to competing. These sporting habits may also be the reason why they have experienced a less favourable affective response when there is no competition, as has been observed on other occasions (e.g. Lavega et al., 2011; Duran et al., 2015).

Due to all this, future educators should know that the meaning of a fun, and also affective, experience will depend both on the characteristics of the motor game and on the students, as well as, for example, on whether they have a sporting background or not.

Gender perspective and mood states when playing.

The gender perspective of this study considers two variables: the sex of the participants and the educational strategy that future educators can use when grouping students in segregated groups (same gender) or in mixed groups (coeducation).

It is generally observed that when participating in both types of game, cooperative and psychomotor, men experience positive affective states with a similar intensity to women and more intense negative affective states than women. This finding coincides with the observations of other studies (e.g. Lavega et al., 2011; Rovira et al., 2014). This phenomenon is accentuated when the games are competitive. We believe that despite their being sports science bachelor's degree students, there is still a tendency towards cultural stereotypes that confirm the close link between competition and masculinity (Clément-Guillotin, & Fontayne, 2011; Gillison et al., 2012). This could explain why men prefer competitive games, whereas women lean more towards cooperation (with or without the presence of competition) (Cumming et al., 2007; Lavega, Alonso et al., 2014).

The other variable that should be considered when relating fun experience to affective experience is the type of student grouping. It has been observed that when people are divided into same-gender groups, play fosters an increase in intensity in positive vigour-activity mood states compared with when they participate in mixed groups. We believe that this is due to two possible causes: the first due to the level of social relationship they have between them, as they are first-year students who still do not know each other well enough to feel so comfortable and uninhibited as when participating with people of the same sex (Derry, & Phillips, 2004; Smith et al., 2014). The second may be due the level of physical condition of boys and girls being different, especially at these ages, which may mean that when participating in mixed groups the intensity is different from when they participate with people of the same sex (Torres, 2005).

In relation to negative mood states, it has been observed that when taking part in mixed groups, in psychomotor games the values are more intense than in cooperative games. However, when the groups are mixed, there are no differences in the MS. In this case, we think that the relationship with people of the other sex is a relevant factor in reducing the experience of negative mood states as has been observed in other studies that have analysed the affective meaning shown by the participants' comments (e.g. Lavega, Alonso et al., 2014; Solmon, 1996).

These findings confirm the need to consider the importance of coeducation on the effects that play may produce on the students' mood states (Lavega, 2009; Smith et al., 2014).

Conclusions

The study confirms the two initial hypotheses, which notes the need for future sports science educators to recognise that there are three criteria that play a key role in promoting affective wellbeing:

1. *The internal logic of the motor game.* It is necessary to recognise that depending on the characteristics of the game, the type of affective experience is unequal. Positive mood states are fostered above all by the adequate use of cooperative, and also competitive, games. Negative mood states increase in intensity in psychomotor games with no competition.
2. *The subjective logic of the students.* It is essential to consider that the affective experience of boys and girls is unequal. Generally, boys express more intense negative mood states than girls do, which may be the cause of possible motor conflicts in physical education classes. It is also necessary to identify the sporting profile of the students,

as if they have a sporting background, the results may be very different compared with other groups of people.

3. *The educational logic of the teacher.* The student grouping type by sex is a factor to consider in promoting affective wellbeing. Participation in mixed groups may foster positive mood states and reduce negative mood states.

However, given that this experience has been conducted with university participants, it is necessary to continue to advance in this type of study with people of other ages and with other sporting background profiles to confirm the regularities found in this research.

Acknowledgments.- This study has received funding from Spain's Ministry of Science and Innovation through R + D + i projects DEP2010-21626-C03-01, DEP2010-21626-C03-02, and DEP2010-21626-C03-03. It has also received funding from Catalanian National Institute of Physical Education [INEFC-Lleida] project PARINEFC2016_005).

References

- Beltrán, V., Devís, J., Peiró, C., & Brown, D. H. (2012). When physical activity participation promotes inactivity negative experiences of Spanish adolescents in physical education and sport. *Youth & Society*, 44(1), 3-27.
- Bisquerra, R. (2011). Educación física, competencias básicas y educación [Physical education, basic competencies and education]. *EmásF: revista digital de educación física*, 11, 4-6.
- Clément-Guillotin, C., & Fontayne, P. (2011). Situational malleability of gender schema: The case of the competitive sport context. *Sex Roles*, 64, 426-439.
- Cumming, S.P., Smoll, F.L., Smith, R.E. & Grossbard, J.R. (2007). Is Winning Everything? The Relative Contributions of Motivational Climate and Won-Lost Percentage in Youth Sports. *Journal of Applied Sport Psychology*, 19 (3), 322-336.
- Derry, J. A., & Phillips, D. A. (2004). Comparisons of selected student and teacher variables in all-girls and coeducational physical education environments. *Physical Educator*, 61(1), 23.
- Duran, C., Lavega, P., Salas, C., Tamarit, M., & Invernó, J. (2015). Educación Física emocional en adolescentes. Identificación de variables predictivas de la vivencia emocional [Emotional physical education in adolescents. Identifying predictors of emotional experience]. *CCD. Cultura, Ciencia, Deporte*, 10(28), 5-18.
- Dyson, B. P. (1995). Students' voices in two alternative elementary physical education programs. *Journal of Teaching in Physical Education*, 14, 394-394.
- Ennis, C. D. (2014). The role of students and content in teacher effectiveness. *Research quarterly for exercise and sport*, 85(1), 6-13.
- Etxebeite, J. (2012). *À cloche-pied. Les jeux sportifs traditionnels et la socialisation des enfants basques*. Sarrebruck: Éditions universitaires européennes.
- Etxebeite, J., Del Barrio, S., Urdangarin, C., Usabiaga, O., & Oiarbide, A. (2014). Ganar, perder o no competir: la construcción temporal de las emociones en los juegos deportivos [Win, lose or not compete: the temporary construction of emotions in sports games]. *Educatio Siglo XXI*, 32 (1), 33-48.
- Fernández-Berrocal, P., & Ruiz, D. (2008). La inteligencia emocional en la educación [Emotional intelligence in education]. *Electronic journal of research in educational psychology*, 6(15), 421-436.
- Fuentes, I., Balaguer, I., Meliá, J.L., & García-Merita, M. (1995). Forma abreviada del Perfil de Estado de Ánimo (POMS) [Short form of the profile of mood states (POMS)]. In E. Cantón (Comp.), *V Congreso Nacional de Psicología de la Actividad Física y el Deporte* [5th National Congress of Physical Activity and Sport Psychology] (pp. 19-26). Valencia: Universidad de Valencia.
- Gillison, F., Sebire, S., & Standage, M. (2012). What motivates girls to take up exercise during adolescence? Learning from those who succeed. *British journal of health psychology*, 17(3), 536-550.
- Goleman, D. (1996). *Inteligencia emocional* [Emotional intelligence]. Kairós: Barcelona.
- Graham, G. (1995). Physical education through students' eyes and in students' voices: Introduction. *Journal of Teaching in Physical Education*, 14(4), 364-371.
- Hromek, R., & Roffey, S. (2009). Promoting Social and Emotional Learning With Games. It's Fun and We Learn Things. *Simulating & Gaming*, 40(5), 626-644.
- Kirk, D. (2013). Educational value and models-based practice in physical education. *Educational Philosophy and Theory*, 45(9), 973-986.
- Lagardera, F. (2007). La conducta motriz: un nuevo paradigma para la educación física del siglo XXI [Motor behaviour: a new paradigm for 21st-century physical education]. *Tándem: didáctica de la educación física*, 24, 89-105.
- Lagardera, F. (2009). Deporte sostenible como nuevo impulso civilizador en la sociedad del siglo XXI [Sustainable sport as a new facilitator of civilised development in 21st-century society]. *Citius, altius, fortius: humanismo, sociedad y deporte: investigaciones y ensayos*, 2(1), 49-71.
- Lagardera, F., & Lavega, P. (2004). *La ciencia de la acción motriz* [The science of motor action]. Lleida: Edicions de la Universitat de Lleida.
- Lavega, P. (2009). La investigación en los juegos tradicionales y en los juegos cooperativos [Research into traditional games and cooperative games]. In V. Navarro and C. Trigueros (Eds.), *Investigación y juego motor en España* [Research and motor games in Spain] (pp. 77-116). Lleida: Universitat de Lleida.
- Lavega, P., Lagardera, F., March, J., Rovira, G., & Coelho, P. (2014). Efecto de la cooperación motriz en la vivencia emocional positiva: perspectiva de género [Effect of motor cooperation on positive emotional experiences: a gender perspective]. *Movimento*, 20(2), p. 593-618.
- Ley Orgánica de educación 8/2013, de 9 de diciembre [Education Act 8/2013, of 9 December] [online] Available at http://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-37 [Consulted: 12 January 2015]
- McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). *Manual for the profile of mood states*. San Diego, CA: Educational and Industrial Testing Services.
- Navarro, V. & Trigueros, C. (Eds.) (2009). *Investigación y juego motor en España* [Research and motor games in Spain]. Lleida: Universitat de Lleida.

- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British journal of educational psychology*, 71(2), 225-242.
- Parlebas, P. (2001). *Juegos, deportes y sociedades: Léxico de praxiología motriz* [Games, sports and societies: lexicon of motor praxeology]. Barcelona: Paidotribo.
- Parlebas, P. (2009). Salud y bienestar relacional en los juegos tradicionales [Health and relational well-being in traditional games]. In C. de la Villa (Ed.), *Juegos tradicionales y salud social* [Traditional games and social health]. Aranda de Duero: Asociación Cultural La Tanguilla.
- Parlebas, P. (2014) Le bateau ivre, in V. Lemay; F. Darbellay (Eds) *L'interdisciplinarité racontée. Chercher hors frontières, vivre l'interculturalité* [pp.57-68]. Bern: Peter Lang
- Pelegrín, A., León, J., Ortega, E., & Garcés, E. (2012). Programa para el desarrollo de actitudes de igualdad de género en clases de educación física en escolares [Program for the development of attitudes of equality of gender in classes of physical education in schools]. *Revista Educación XXI*, 15(2), 271-292.
- Peña, A. M., & Canga, M. (2009). La educación emocional en el contexto escolar con alumnado de distintos países [Emotional education in the school context with pupils from different countries]. *European journal of education and psychology*, 2(3).
- Pucher, K.K., Boot, N.M.W.M., & De Vries, N.K. (2013). Systematic review: School health promotion interventions targeting physical activity and nutrition can improve academic performance in primary-and middle school children. *Health Education*, 113(5), 372-391.
- Rovira, G., López Ros, G., Lagardera, F., Lavega, P., & March, J. (2014). Un viaje de exploración interior: Emociones y estado de ánimo en la práctica motriz introyectiva [A journey of inner exploration: emotions and mood in the context of introjective motor activity]. *Educatio siglo XXI: Revista de la Facultad de Educación*, (32), 105-125.
- Sáez de Ocáriz, U., & Lavega, P. (2013). Transformar conflictos en educación física en primaria a través del juego. Aplicación del índice de conflictividad [Transforming conflicts in primary school physical education through games: application of the conflictivity index]. *Cultura y Educación*, 25(4), 549-560.
- Salovey, P., & Mayer, J.D. (1990). Emotional intelligence. *Imagination, Cognition, and Personality*, 9, 185-211.
- Smith, N. J., Lounsbury, M. A., & McKenzie, T. L. (2014). Physical activity in high school physical education: impact of lesson context and class gender composition. *Journal of Physical Activity and Health*, 11, 127-135.
- Solmon, M. (1996). Educational impact of motivational climate on students' behaviors and perceptions in a physical education setting. *Journal of Educational Psychology*, 88, 731-738.
- Torres, D. (2005). Propuesta de una programación didáctica coeducativa en Educación Física en Educación Primaria: Un caso en la sierra de Madrid [A coeducational didactic programme proposal in primary school physical education: a case in Sierra de Madrid]. *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación*, 8, 43-49.
- Valdivia, P. A., Sánchez, A., Alonso, J. I., & Zagalaz, M. L. (2010). La coeducación en el área de Educación Física en España: Una reseña histórica [Coeducation in Spanish physical education: a historical review]. *Cultura, Ciencia y Deporte*, 14, 77-83.
- Wolf, F. M. (1986). *Meta-analysis: Quantitative methods of research synthesis*. Beverly-Hills, CA: Sage.

(Article received: 21-07-2015; revised: 08-01-2016; accepted: 08-02-2016)