

Research article

## Analysis of motivational profiles of satisfaction and importance of physical education in high school adolescents

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### Abstract

The purpose of this study was to analyze the motivational profiles of satisfaction with and importance of physical education in high school students and its relation with gender and the practice of sport. The sample comprised 2002 students aged from 12 to 19 who completed the Sport Motivation Scale (Núñez et al., 2006), the Perception of Success Scale (Martínez et al., 2006), the Sport Satisfaction Instrument (Baena-Extremera et al., 2012) and the Importance of Physical Education Scale (Moreno et al., 2009). Descriptive analyzes, correlations between the scales, a cluster analysis for profiles, and a MANOVA were conducted to examine differences by gender. Three clusters (profiles) were identified. The first profile identified was “moderate” motivation (n = 463) and was associated with boys who practice physical activity for less than 3 hours per week. The second profile identified was “low” motivation (n = 545) and was associated mainly with girls who practice physical activity for less than 3 hours per week. And lastly the third profile identified was “high” motivation (n = 910), which was found to be greater in boys who practiced physical exercise for more than 3 hours a week.

**Key words:** Self-determined motivation, satisfaction, importance, physical education.

### Introduction

Physical education (PE) seeks, among other aspects, to help students acquire long-lasting habits of physical activity and sports that will improve their overall health (Ardoy et al., 2010). To achieve these habits, Moreno-Murcia et al. (2013), consider it vital to analyze the importance that students give to PE. To reach that goal it is necessary to understand the psychological factors that influence students’ motivation, satisfaction and the importance they give to the subject.

With regard to students’ motivation, satisfaction and the importance they give toward physical education and sport, there are various theories that have been applied to sport and education. These theories include Self-efficacy Theory (Bandura, 1986), Self-Determination Theory (Deci, 1975; Ryan and Deci, 2000), and Achievement Goals Theory (Ames, 1992; Dweck and Elliot, 1983; Nicholls, 1984). Self-determination theory explains human behavior through the reasons they believe lead to participation in an activity, focusing on how intrinsic motivation influences athletes both to develop and persist and even compete (Frederick and Ryan, 1995).

This theory is understood as a continuum establishing different levels of self-determination. That is, from highest to lowest degrees of self-determination, behavior can be intrinsically motivated, extrinsically motivated or non-motivated. The greatest degree of self-determination is found in those who are intrinsically motivated, which involves a commitment to the activity because of the pleasure and enjoyment obtained from it, making it an end in itself (Ryan and Deci, 2000). In the case of PE, motivation is a key factor that may influence the results obtained because high learning achievements are often attributed to the high motivation of students and environments that promote motivation (Moreno-Murcia et al., 2011; Standage and Treasure, 2002; Vallerand, 2001).

In the Achievement Goals Theory, Nicholls (1984, 1989) states there are two perspectives that predominate in the academic context, one being ego orientation and the other task orientation. According to this theory when students are task-oriented they judge their ability levels against themselves, while when they need to compare their skills against other students they are ego-oriented (Nicholls, 1989). In the context of PE, Ruiz-Juan et al. (2011) found that task-oriented students are very motivated, and their objective is the achievement in itself. But when the student is ego-oriented the need is to do better than the rest of their classmates. They must demonstrate their ability by winning, by scoring more than others in an activity or performing the action that is considered good based on established patterns. According to Baena-Extremera et al. (2012), Ames and Archer (1988), Duda and Nicholls (1992) and Nicholls (1989), among others, when students are task-oriented they tend to have fun and enjoy the practice of the activity, as opposed to when they are ego-oriented when they are bored or do not enjoy doing the activity. According to Ntounamis (2005) when students enjoy themselves they tend to be intrinsically motivated, leading them to participate actively in PE classes and even to doing physical activity in their leisure time. Similarly, when students feel satisfaction and enjoy what they are doing, they tend to give it greater importance than to other similar activities, feeling even more motivated to do them. Thus, Moreno et al. (2006) state that attitudes are more positive to PE as the student feels more motivated, more satisfied, and therefore, gives it more importance.

The growing interest in analyzing the importance that students attach to PE is understandable, especially given the relationship established between the importance

of PE and the creation of a pattern of physical and sports practice (Kilpatrick et al., 2002).

The contribution of motivational profiles by Ntoumanis (2002) and Wang and Biddle (2001) have shown that in educational settings and through theories like Self-determination theory and Achievement Goals Theory, those with self-determined motivational profiles also connect with cooperative learning (motivational climate to the task), and positive motivational consequences (interest, effort, satisfaction, fun and high participation). In education, understanding the motivational profiles of students as well as their goals, satisfaction and even the importance and value they attach to PE can influence the teaching task if the teacher identifies keys or guidelines for organizing the work. Therefore the necessity of analyzing motivational profiles of high school PE students, including the degree of satisfaction, importance and usefulness that the student expressed may influence the acquisition of physical activity habits. It was then hypothesized that most self-determined motivational profiles in PE will include satisfaction and the importance and usefulness of the subject together with greater practice of physical exercise weekly.

## Methods

### Participants

Participants were 2002 students (970 males = 48.5%; 1032 females = 51.5%) from 17 high schools in the provinces of Almeria, Cordoba, Granada, Jaen and Seville, Spain. The age range was between 12 and 19 years old ( $M = 14.99$ ,  $SD = 1.43$ ), with boys' average age of 15.06 ( $SD = 1.43$ ) and that of girls 14.93 ( $SD = 1.43$ ).

### Instruments

A questionnaire was developed by combining four recognized scales to assess motivation (Sport Motivation Scale), perception of success (Perception of Success Questionnaire), sport satisfaction (Sport Satisfaction Questionnaire) and importance of physical education (Importance of Physical Education).

**Sport Motivation Scale (SMS):** Núñez et al. (2006) developed and validated a Spanish version of Pelletier's et al. (1995) Sport Motivation Scale adapted to PE to measure motivation. The original scale was called *Échelle de Motivation dans les Sports* (EMS; Brière et al., 1995) and translated into English by Pelletier et al. (1995) and renamed Sport Motivation Scale (SMS), obtaining psychometric properties similar to the French version. The scale consists of 28 items measuring the types of motivation established by Self-determination theory (Deci and Ryan, 1985) which has a multidimensional explanation of motivation: amotivation (4 items) (e.g. "I have the feeling that I am not able to be successful in the physical and sports activities that I do"), extrinsic motivation (EM) (12 items; external introjected and identified regulation) (e.g. "For the prestige of being good at activities in class"), and intrinsic motivation (IM) (12 items; knowledge, self-improvement and stimulation) (e.g. "For the pleasure of knowing more about the activities I do"). Responses were collected on a scale of polytomous items with scores

ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Previous studies demonstrated the internal validity of the factorial structure of the instrument and its reliability in the field of PE (Moreno and Llamas, 2007; Moreno, et al., 2006). Balaguer et al. (2007) stated the Spanish version of SMS with three sub-scales has shown adequate psychometric properties ( $\chi^2 = 1006.30$ ;  $gl = 347$ ;  $ECVI = 1.35$ ;  $RMSEA = 0.08$ ;  $CFI = 0.90$ ;  $NNFI = 0.89$ ). The internal consistency found in this study was: IM, Cronbach's alpha ( $\alpha$ ) = 0.93 ( $\alpha = 0.84$  to knowledge,  $\alpha = 0.82$  self-improvement and  $\alpha = 0.82$  to stimulation), EM,  $\alpha = 0.89$  ( $\alpha = 0.80$  for identification,  $\alpha = 0.69$  for introjection and  $\alpha = 0.77$  for external regulation) and amotivation,  $\alpha = 0.72$ .

**Perception of Success Questionnaire (POSQ):** The Spanish version (Cervelló et al., 1999) adapted to PE (Martínez et al., 2006) of the original *Perception of Success Questionnaire* (Roberts and Balagué, 1991; Roberts et al., 1998) was used to measure perception of success. This instrument consists of 12 items measuring students' dispositional goal orientations in PE classes by two measurements, *task orientation* (e.g. "When I show a clear personal improvement") and *ego orientation* (e.g. "When I'm better at the activity than the rest of my classmates"). The instructions ask students to indicate the degree of agreement or disagreement with the items, collecting responses on a scale of polytomous items with a score range from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous studies demonstrated the internal validity of the factorial structure of the instrument and its reliability in the field of PE (Cervelló and Santos-Rosa, 2000; Martínez et al., 2006; Quevedo-Blasco et al., 2009), with values ranging from  $\alpha = 0.83$  (task) and  $\alpha = 0.92$  (ego). Martínez et al., (2006) found the Spanish version of POSQ shows adequate psychometric properties ( $\chi^2 = 1126$ ;  $gl = 318.3$ ;  $CFI = 0.96$ ,  $NFI = 0.95$ ,  $TLI = 0.95$ ,  $RMSR = 0.03$ ,  $RMSEA = 0.06$ ). In this study the internal consistency of the subscale of task orientation was  $\alpha = 0.87$  and ego orientation,  $\alpha = 0.92$ .

**Sport Satisfaction Instrument (SSI):** The Spanish version adapted to the context of PE (SSI-PE) (Baena-Extremera et al., 2012) of the original *Sport Satisfaction Instrument* (Duda and Nicholls, 1992; Balaguer et al., 1997) was used to measure satisfaction. This instrument consists of 8 items measuring intrinsic satisfaction in PE classes by two subscales: satisfaction / fun (e.g., "I usually have fun in the Physical Education classes") and boredom (e.g., "In Physical Education, I usually wish the class would end quickly"). The instructions asked students to indicate the degree of agreement with items reflecting criteria of fun or boredom. Responses were collected on a scale of polytomous items with a score range from 1 (*strongly disagree*) to 5 (*strongly agree*). Duda and Nicholls, (1992), Balaguer et al. (1997), and Castillo, Balaguer and Duda (2001) demonstrated the internal validity of the factorial structure shown in the two subscales and acceptable reliability indices ranging from  $\alpha = 0.82$  for satisfaction / fun and  $\alpha = 0.71$  for boredom. Baena-Extremera et al. (2012) found the Spanish version of SSI-EF shows adequate psychometric properties ( $\chi^2 = 38.53$ ,  $gl = 13$ ,  $GFI = 0.98$ ,  $NFI = 0.98$ ,  $NNFI = 0.99$ ,  $CFI = 0.99$ ,  $RMSEA = 0.31$ ), and found reliability indices

between  $r = 0.92$  for satisfaction / fun and  $r = 0.79$  for boredom. This study found  $r = 0.92$  for satisfaction / fun and  $r = 0.79$  for boredom.

**Importance of Physical Education (IPE):** Moreno et al. (2009) developed an instrument to assess the importance and usefulness that students assign to PE and was measured by 3 items (e.g. “Compared with the other subjects, I think PE is one of the most important”). The students had to answer on a scale of polytomous items with a score range from 1 (*totally disagree*) to 4 (*totally agree*). Previous studies demonstrated the internal validity and reliability in the field of PE:  $r = 0.75$  (Moreno et al., 2009),  $r = 0.76$  (Moreno et al., 2006; Moreno and Llamas, 2007). In this study the reliability obtained was .76. In addition to the items related to the psychological variables of interest in this study, two other variables of identification were used to show their interaction with the profiles found. The first additional variable was gender: (males=1; females = 2) and the second the number of hours spent weekly engaged in physical exercise (1 hour or less = 1; 2 to 4 hours = 2; more than 3 hours =3).

### Procedure

Authority to conduct the investigation was given by the governing bodies of the schools. Students were informed of the purpose of the study, their rights as participants and gave written consent to participate. The tests were performed in PE class after an agreed date and time with each teacher was established. Each participant took 20-30 minutes to complete the questionnaires. All responses to the instruments were and will remain anonymous.

### Statistical analysis

The statistical analyzes were conducted in the following order: descriptive statistics, correlations between the subscales, internal consistencies of each subscale and the indices of skewedness and kurtosis, these being generally close to zero and  $<2.0$  indicating similarity with the univariate normal curve, and finally cluster analysis. This multivariate technique aims to group elements (or variables) for maximum homogeneity in each group and for the major differences between them. It was expected that the characteristics of students found in a group would be similar in some respects and different in others (Aldenfer and Blashfield, 1984). Two cluster analyses were performed following the suggestions of Hair et al. (1999). The sample was divided randomly into two sub-groups according to the provinces of the Autonomous Community of Andalusia (Spain), with Group A being made up of students from Granada and Seville and Group B with students from Almeria, Cordoba and Jaen. With the aim

of identifying the motivational profiles represented in Group A, an exploratory hierarchical cluster analysis using Ward's method was conducted, and based on reading the dendrogram and the logical results obtained, a solution was selected. These results were verified by obtaining the motivational profiles of Group B through cluster analysis using the method of *k-means*. A final cluster analysis of the entire sample was conducted using *k-means*. The clusters were then examined to determine whether there were differences between the profiles and the groups in which gender and weekly physical and sports practice acted as independent variables. Examination was completed with a residual analysis to examine potential group differences based on gender and weekly physical and sports practice. All analyses were performed using SPSS v.17.0.

## Results

### Descriptive analysis and correlation

Table 1 presents the descriptive values of each of the research variables. The average scores are highest on the variables related to student motivation corresponding to intrinsic motivation, followed by extrinsic motivation, which also obtained high scores, while amotivation obtained the lowest score. Achievement goals and task orientation scored a higher average than ego orientation. On a satisfaction scale, satisfaction / fun had values significantly higher than boredom. The importance of PE had a mean of 3.06.

Also shown in Table 1 the correlations showed a high positive correlation with extrinsic motivation, fun, task-orientation and the importance and usefulness of PE, whereas amotivation and boredom showed a negative correlation. Extrinsic motivation showed a significant positive correlation with fun, the importance of PE, task- and ego-orientation, but showed a negative correlation with boredom. Amotivation had a notably high positive correlation with boredom, and negative correlation with fun and task-orientation. Ego-orientation was correlated positively with task-orientation. The importance of PE was also significantly positively related to satisfaction / fun while negatively correlated with amotivation and boredom.

### Cluster analysis

Cluster analysis was performed to examine the motivational profiles, satisfaction and importance of PE, adjusting the phases to the procedure outlined by Hair et al. (1999). All cases with missing data in any of the eight variables were excluded and all variables were

**Table 1.** Mean (M), standard deviation (SD) and correlations among variables.

Subscales	M	SD	Skewness	Kurtosis	a	1	2	3	4	5	6	7	8
1.Intrinsic Motivation	4.94	1.22	-.30	-.23	.93	.82**	-.09**	.20**	.48**	.65**	-.37**	.44**	
2.Extrinsic Motivation	4.63	1.16	-.14	-.23	.89	-	.06**	.33**	.37**	.55**	-.25**	.42**	
3.Amotivation	3.15	1.44	.35	-.67	.72	-	-	.07**	-.16**	-.20**	.42**	-.09**	
4.Ego	3.31	1.03	-.25	-.55	.92	-	-	-	.35**	.16**	-.02	.08**	
5.Task	4.20	.68	-1.03	1.73	.87	-	-	-	-	.35**	-.24**	.18**	
6.Satisfaction/Fun	4.16	.87	-1.15	1.20	.92	-	-	-	-	-	-.56*	.44**	
7.Boredom	2.01	1.01	.95	.24	.79	-	-	-	-	-	-	-.22**	
8.Importance of PE	3.06	.72	-.73	.17	.76	-	-	-	-	-	-	-	

\*p < 0.05; \*\* p < 0.01

**Table 2.** Mean (M), standard deviation (SD) and Z scores for the clusters according to the Granada and Seville provinces for group A (n=1001; 52.2%).

	Cluster 1 (n=340; 34%) "Moderate motivation"			Cluster 2 (n=251; 25%) "Low motivation"			Cluster 3 (n=410; 41%) "High motivation"		
	M	SD	Z	M	SD	Z	M	SD	Z
<b>Intrinsic Motivation</b>	4.81	.86	-.11	3.62	.90	-1.16	5.78	.86	.70
<b>Extrinsic Motivation</b>	4.36	.80	-.23	3.47	.93	-.99	5.38	.90	.53
<b>Amotivation</b>	4.10	1.10	.06	3.14	1.09	.77	2.70	1.55	-.51
<b>Ego</b>	3.82	.77	.29	2.65	.82	-.51	3.67	.97	.17
<b>Task</b>	4.42	.50	-.15	3.59	.69	-.56	4.60	.43	.70
<b>Satisfaction/Fun</b>	3.72	.85	.18	3.55	.76	-1.10	4.74	.46	.55
<b>Boredom</b>	2.81	.96	.12	2.93	.89	.62	1.74	1.00	-.66
<b>Importance of PE</b>	2.60	.60	.01	2.55	.69	-.83	3.39	.58	.61

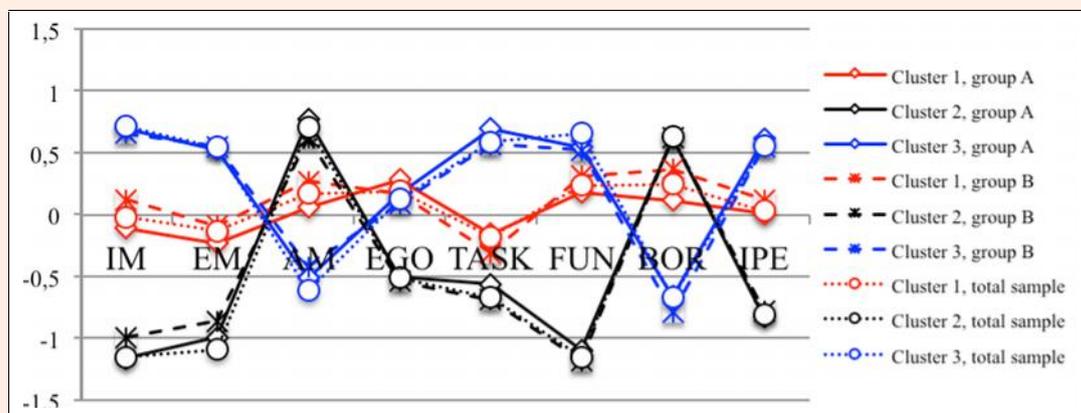
standardized using Z scores. Students were then grouped in the clusters. First, an exploratory hierarchical cluster analysis was conducted to identify the number of clusters in group A. Due to the exploratory nature of this analysis, it was important to confirm the results with an independent sample. Therefore, a *k-means* cluster analysis (not hierarchical) of group B was conducted. Since none of the Pearson correlation coefficients were above .90, there was no problem of multicollinearity (Hair, et al., 1999).

In an exploratory analysis of group A (n = 1001, 52.2%), Ward's method was used since it is a hierarchical procedure that minimizes the distance between subjects within the cluster (it reduces the variance within the group) and avoids forming "long chaining" (Aldenderfer and Blashfield, 1984). The Euclidean distance was used as a similarity measure. The dendrogram suggested three clusters as the most convenient. The first profile was called the "moderate motivation profile" (n = 340, 34%) and included students with moderate levels in the different variables and higher averages in ego-orientation and amotivation; highest Z scores corresponded to ego-orientation and satisfaction / fun, while the lowest Z scores were obtained by extrinsic motivation, task-orientation and intrinsic motivation. The second profile was labeled "low motivation profile" (n = 251, 25%) and included students with the lowest levels of motivation, satisfaction and importance of PE and with high levels in amotivation and boredom. The highest values of Z scores corresponded to amotivation and boredom, while the

lowest values of Z scores were obtained in intrinsic motivation, satisfaction / fun, extrinsic motivation and importance of PE. The third profile was called "high motivation profile" (n = 410, 41%) and included the highest values of intrinsic motivation, extrinsic motivation, task-orientation, satisfaction / fun and importance of PE; the highest Z scores also corresponded to these variables. By contrast, this profile included the lowest values of boredom and amotivation (see Table 2 and Figure 1).

For the analysis of the students in Group B (n = 917; 48.8%) an analysis of k-means clustering identified three profiles (see Figure 1). K-means cluster analysis is considered confirmatory because it requires a priori provision of the specific number of clusters expected to emerge in the sample. The profiles of the students in Group B found in this analysis showed these students have similar characteristics to those found in Group A: "moderate motivation profile" (n = 284, 31%), "low motivation profile" (n = 282, 30.7%) and "high motivation profile" (n = 351, 38.3%) (see Table 3 and Figure 1). Some differences in the overall distribution of students within the groups were found. There was a greater representation of both groups in cluster 3, although was more numerous in Group A and similarly, cluster 1 was larger in group A, while cluster 2 was the most represented in Group B.

Finally, an analysis of *k-means* clustering (non hierarchical) was conducted with the total sample, revealing cluster profiles similar to those found in analyses of



**Figure 1.** Motivational profiles, satisfaction and importance of Physical Education: group A, group B and total sample. Z scores are on the vertical axis on the horizontal axis appear subscales with the following abbreviations: IM=Intrinsic Motivation, EM=Extrinsic Motivation; AM=Lack of Motivation; EGO=Ego Orientation; TASK=Task Orientation; FUN=Satisfaction/Fun; BOR=Boredom; IPE=Importance Physical Education. Cluster 1: "moderate motivation profile"; cluster 2: "low motivation profile"; cluster 3: "high motivation profile".

**Table 3.** Mean (M), standard deviation (SD) and Z scores for the clusters from the Almería, Córdoba and Jaén provinces for group B (n = 917; 47.8%).

	Cluster 1 (n = 284; 31%) "Moderate motivation"			Cluster 2 (n = 282; 30.7%) "Low motivation"			Cluster 3 (n = 351; 38.3%) "High motivation"		
	M	SD	Z	M	SD	Z	M	SD	Z
<b>Intrinsic Motivation</b>	4.41	.85	.12	3.93	.92	-.99	5.74	.88	.66
<b>Extrinsic Motivation</b>	4.63	.81	-.09	3.63	.94	-.86	5.30	.85	.55
<b>Amotivation</b>	3.80	1.09	.27	2.75	1.13	.62	2.53	1.29	-.42
<b>Ego</b>	3.57	.85	.17	2.51	.79	-.54	3.29	.95	.09
<b>Task</b>	4.10	.52	-.31	3.64	.75	-.69	4.52	.40	.57
<b>Satisfaction/Fun</b>	4.01	.89	.31	3.72	.87	-1.18	4.61	.53	.52
<b>Boredom</b>	2.42	.92	.37	2.94	.88	.62	1.86	1.00	-.79
<b>Importance of PE</b>	2.83	.57	.12	2.66	.78	-.78	3.40	.60	.55

random sample groups (see Table 4 and Figure 1).

**Cluster 1:** The first profile consisted of 463 people (24.1% of total) and was called "moderate motivation profile". Z scores were highest for boredom ( $Z = 0.25$ ) and satisfaction / fun ( $Z = .24$ ), followed by ego-orientation ( $Z = 0.19$ ) and motivation ( $Z = 0.17$ ). The variable that scored lowest was task-orientation ( $Z = -0.18$ ).

**Cluster 2:** The second profile was called "low motivation profile" which consisted of 545 students (28.4% of total). In this case the highest Z scores corresponded to amotivation, followed by boredom. These are the only two variables that scored positively in this profile. Those which scored lowest were intrinsic motivation ( $Z = -0.15$ ) and satisfaction / fun ( $Z = -1.15$ ), followed by extrinsic motivation ( $Z = -1.09$ ), the importance of PE ( $Z = -0.81$ ), task-orientation ( $Z = -0.67$ ) and ego-orientation ( $Z = -0.51$ ).

**Cluster 3:** The third profile is the one with the highest number of students, with a total of 910 (47.5% of total), and was called "high motivation profile". It presented the highest Z scores in intrinsic motivation and ( $Z = 0.72$ ), followed by satisfaction / fun, task-orientation, importance of PE and extrinsic motivation. The lowest values corresponded to boredom and amotivation ( $Z = -0.67$  and  $Z = -0.61$ , respectively).

#### Gender differences and weekly practice of physical exercise

A MANOVA was performed to analyze differences by gender and hours of weekly practice of physical exercise among certain profiles (Table 3). Homogeneity of covariance using Box's M test was examined, rejecting the null hypothesis of fit of the data (M Box = 68.33,  $F = 5.67$ ,  $p < 0.000$ ). Consequently, the suggestion of Tabachnick and Fidell (2006) using Pillai's Trace in the place of Wilks' Lambda for assessing the significance

multivariate main effects and interactions was utilized. The MANOVA revealed significant differences (Pillai's Trace = 0.11,  $F_{(6,3834)} = 35.5$ ,  $p < 0.000$ ). The subsequent ANOVAs showed significant differences by gender ( $F_{(2, 1915)} = 28.25$ ,  $p < 0.000$ ) and hours of weekly practice ( $F_{(2, 1915)} = 31.41$ ,  $p < 0.000$ ).

Table 5 shows that cluster 1 was positively associated with 48.6% of boys and those who practice exercise less than 3 hours per week. Cluster 2 correlated positively with girls (69.7%) and those who exercised less than 3 hours per week. Cluster 3 was positively associated with boys (58.6%) and those who exercise for more than 3 hours per week (48%).

#### Discussion

The main purpose of this study was to identify and analyze the motivational profiles of high school students including satisfaction, importance and usefulness that the students give to the subject of PE. In addition the relationship between those profiles and the variable of gender and with the number of hours spent practicing sport and physical activity in their free time was analyzed.

The results of this study confirmed the existence of three motivational profiles that corroborated patterns similar to those extracted in a cluster analysis with two random sub-samples. The three motivational profiles were based on the level of self-determination (high, low and moderate or intermediate) (Boichè et al, 2008; Moreno et al, 2006; Ntoumanis, 2002). Furthermore, Cox and Ullrich-French (2010) also found three profiles they called "positive", "weak" and "mixed". Additional studies found only two profiles of "high" and "low" motivation (Vlachopoulos et al., 2000; Yli-Piipari et al., 2009). The three profiles found in this study, will be referred to as "moderate motivation", "low motivation" and "high motivation".

**Table 4.** Mean (M), standard deviation (SD) and Z scores for the clusters of the total sample.

	Cluster 1 (n=463; 24.1%) "Moderate motivation"			Cluster 2 (n=545; 28.4%) "Low motivation"			Cluster 3 (n=910; 47.5%) "High motivation"		
	M	SD	Z	M	SD	Z	M	SD	Z
<b>Intrinsic Motivation</b>	4.57	.92	-.02	3.81	.90	-1.15	5.78	.82	.72
<b>Extrinsic Motivation</b>	4.52	.93	-.13	3.54	.83	-1.09	5.33	.91	.55
<b>Amotivation</b>	4.06	1.11	.17	2.95	1.09	.71	2.65	1.42	-.61
<b>Ego</b>	3.73	.82	.19	2.58	.82	-.51	3.50	1.02	.13
<b>Task</b>	4.26	.51	-.18	3.60	.69	-.67	4.54	.45	.59
<b>Satisfaction/Fun</b>	3.81	.87	.24	3.60	.88	-1.15	4.70	.39	.66
<b>Boredom</b>	2.70	.99	.25	2.94	.84	.63	1.78	.54	-.67
<b>Importance of PE</b>	2.75	.77	.03	2.60	.71	-.81	3.40	.54	.56

**Table 5.** Characteristics of the clusters by gender and hours of weekly practice of physical exercise.

		Sex		Weekly Practice of Physical Exercise		
		Males (n=922) 48%	Females (n=996) 52%	1 h. or less (n=622) 32.4%	2-3 h. (n=599) 31.2%	More than 3 h. (n=697) 36.4%
<b>Cluster 1</b> “Moderate motivation”	n=463	224	239	166	159	138
	%	48.4%	51.4%	35.9%	34.3%	29.8%
	Residual	.2	-.2	1.8	1.5	-3.2
<b>Cluster 2</b> “Low motivation”	n=545	165	380	225	198	122
	%	30.3%	69.7%	41.3%	36.3%	22.4%
	Residual	-9.8	9.8	5.1	3	-7.9
<b>Cluster 3</b> “High motivation”	n=910	533	377	231	242	437
	%	58.6%	41.4%	25.4%	26.6%	48%
	Residual	8.7	-8.7	-6.1	-4	9.9

The results of this study have important theoretical implications and expand the knowledge base about students' motivations, their satisfaction and the importance they place on PE. As shown by the data, high school students' motivation was primarily intrinsic, scoring low on amotivation and high on satisfaction / fun. Moreover, these students had a goal orientation toward the task. Studies that have examined the Achievement Goals Theory related to motivational profiles and motivational variables have found that task-orientation is associated with fun, intrinsic motivation and the belief that the student's success depends on effort and interest, while ego-orientation is associated with negative emotional feelings such as boredom, concern about the outcome or dissatisfaction (Walling and Duda, 1995).

The results show the positive relationship between intrinsic motivation and task-orientation, confirming the results obtained in different studies on PE which also reveal a positive motivational climate to the task with self-determined motivation (Moreno et al., 2006; Moreno-Murcia et al., 2013; Standage et al., 2003). In general, this is a subject highly valued by students, hence the high values obtained in satisfaction / fun and low in boredom. Satisfaction / fun was positively associated with the importance attached to PE since, as stated by Mendoza et al. (1994), most students feel that they really like PE classes and considered it an important subject. These data corroborate those of Moreno and Cervello (2003) who found 90.1% of students surveyed, considered PE an important subject. Looking at the data from cluster 3, (high motivation) (n = 910 students), it can be seen that these students are motivated towards PE, they have fun, are oriented to the task and also place high importance to PE.

Cluster 1- *moderate motivation*- showed the highest values of ego orientation, coinciding with one of the profiles identified by Moreno et al. (2006), with the lowest values in task orientation and extrinsic motivation. These results agree with those reported by Moreno-Murcia et al. (2013) and Ntoumanis and Biddle (1999), who state that teachers who during their teaching promote an ego oriented climate foster poor school performance due to lack of self-determined motivation, even reaching levels of boredom or discouragement. This is the opposite of what would happen in cluster 3, where a motivational climate that involves the task develops intrinsic and extrinsic motivation. In fact, in this study we can see how lack of motivation is positively correlated with boredom

and negatively with fun and task orientation, qualities more characteristic of cluster 3. Moreover, cluster 2 of this study, *low motivation*-, obtained high positive values in amotivation and boredom, and low in intrinsic motivation, fun and importance and usefulness of PE. This means that the students least motivated towards PE express less interest in the practice of physical and sports activities (Moreno and Cervelló, 2003). The data obtained in cluster 1 of this work, which generally includes males who practise for less than 3 hours a week are in line with the above.

It can also be seen how in clusters 1 and 2 there are high values of amotivation and boredom, while in cluster 2 we found low levels in and intrinsic motivation and importance given to PE. These results are in line with the profiles found by Ntoumanis (2002), who obtained higher data of boredom and amotivation in the moderate motivation and controlling motivation/amotivation profiles. Moreover authors such as Boichè et al. (2008) associate amotivation with the moderate motivational profile as well as that of low motivation (Yli-Piipari et al., 2009). But in our analysis it can also be appreciated that these data are accompanied in both profiles by less than 3 hours per week playing sport, a finding that agrees with Moreno et al. (2006), namely, that when students do not perform much physical activity in or outside school they tend to have similar values to clusters 1 and 2. Moreover, these authors argue that, in contrast, attitudes are more positive towards PE when the student feels more motivated, does physical activity out of school and practices more often. These statements corroborate the data obtained in cluster 3. These data can equally be explained from the Hierarchical Model of Intrinsic and Extrinsic Motivation (Vallerand, 1997; 2001) so that if students have positive experiences during PE classes (situational) they may develop positive attitudes towards PE (contextual) and therefore commit them to practicing weekly physical exercise (global). Nevertheless, several authors found that the students' assessment of PE classes (García Ferrando, 1993; Torre, 1997) was not very positive, as the student was aware that much time was lost in class, few hours were in fact spent doing PE and sport, and hence these students gave little importance to this subject.

Carreiro da Costa et al. (1997) and Cervelló (1999) examined motivation in PE, concluding that the most motivated students enjoy classes, like to practise sports activities, are more involved in tasks and even grant

greater importance to this subject, and it can be said that the results of this study are consistent with the results of those authors.

Cluster 3 (high motivation) shows the highest values corresponding to intrinsic motivation, satisfaction, fun, task-orientation, importance of PE and extrinsic motivation. These data support the contributions of Biddle et al. (1995), Goudas (1998), and Walling and Duda (1995), who suggest that most self-determination profiles relate to a perception of climate that involves the task and in turn these students grant more importance to PE (Moreno-Murcia et al., 2013). In fact, Vlachopoulos et al. (2000) obtained a profile with these characteristics, in which students had high scores on both types of motivation (intrinsic and extrinsic), high values in the practice of extra-curricular physical activity and attached great importance to PE. The high motivation profiles obtained by Yli-Piipari et al. (2009) were characterized by very high values of intrinsic and extrinsic motivation, while the so-called positive profile of Cox and Ullrich-French (2010) show a high level of self-determination, fun, effort and practicing physical activity outside school.

Jimenez (2003) analyzed the relationship between motivational climate, healthy lifestyles and extracurricular sports, finding that when teachers fostered a motivational climate that rewarded effort, active participation and personal autonomy, it was positively related to a more favorable assessment of PE classes and increased extra-curricular sports. The data found in cluster 3 corroborate these findings. Similarly, Moreno and Cervelló (2003) found that students who play some extracurricular sports found more enjoyment in formal PE classes, not wanting to change the subject for any other.

Cluster 3 is positively associated with males, agreeing with Moreno et al. (1996) and Moreno and Cervelló (2003) who state that males have a greater preference for PE and sport than females. According to Macdonald (1990) and Lirgg (1993) this may partly be due to the fact that girls receive less positive feedback than boys, do not have the same opportunities to engage in these activities, the fact that teachers encourage boys more strongly than girls and girls probably perceive this difference in treatment (Cervelló et al., 2004).

The subjects in this profile exercise for more than 3 hours a week. This means that these students have, in addition to school PE classes, at least additional 3 hours per week of physical activity and sport. The highest the number of sessions per week, the best is the students' evaluation of the subject of PE (Moreno and Cervelló, 2003). This study supported previous findings that students who perform extracurricular sports, show more pleasure and value PE classes more than those students who don't (Moreno et al., 2002a; 2002b). In this regard, several studies show that self-determined motivation is positively related to greater commitment, adherence to sport, effort and persistence (Ferrer-Caja and Weiss, 2000; Moreno et al., 2007; Standage et al., 2003). Other aspects of this profile may also possibly strengthen this adherence.

Casimiro (1999) and Cervelló and Santos-Rosa (2000) found that students like most and give greater importance to PE than to all other subjects, finding the

highest scores among elementary students rather than among high school students, and more among boys than girls. In fact, cluster 3 showed that when boys attach great importance and usefulness to PE that they are more likely to make up the hours that they need for PE, they practiced more than 3 hours a week.

Finally, it is interesting to note the gender analysis in each of the profiles, as well as the results that show that highest values of satisfaction / fun and importance of PE are among the high motivational profiles and are linked to doing physical exercise and sport outside school. Teachers should think about these findings when planning PE lessons, so that they are in line with the interests of today's boys and girls, improving satisfaction, fun, and the importance of the subject, thereby fostering long-lasting physical and sporting habits.

Based on the results of the variables included in the high motivation profile in Table 5, presenting the relationship by gender and hours of practice outside school, we propose the following aspects to promote adherence to exercise and sport regularly outside school PE:

a) Selection of content covered in the classroom, taking into account the current interests of adolescents, particularly girls, may increase their motivation in PE classes. To increase students' interest in physical activity thereby greater satisfaction in PE by transferring that interest to their leisure activities.

b) The teacher plays an important role not only in content selection, but also in treatment of students in the classroom to raise the importance and usefulness of PE among students. When the teacher encourages a motivational climate towards the task, student motivation may well be increased, as well as fun and their enjoyment of classroom practice. This may increase the number of components associated with cluster 3 (high motivation).

c) Analyze the school's environmental context (extracurricular activities, beach, mountains, etc.) so that the content covered in class can be continued by students outside school for as many hours as possible.

d) Increase and improve the feedback given to girls, to try to improve their liking of PE since boys typically receive more positive feedback boys from the teacher. This preference is clearly seen in the cluster 3 with the boys.

### **Limitations and strengths of this study**

Despite the considerable sample size of students involved, one of the major limitations of this study is that a representative sample design for all students was not possible. In contrast, among the strengths would include development and analysis, reinforcing the findings and contributing to current knowledge in the analysis of motivational profiles in PE. An interesting contribution of this work is the inclusion of variables related to satisfaction / fun and the importance and usefulness of PE in motivational profiles of a sample of Spanish adolescents relating to the practice of physical exercise outside school.

### **Future research directions**

From the results of this research, the need to continue studying motivational profiles in adolescent students is warranted with the goal of better defining the profiles of

high motivation or self-determined motivation. In addition, a possible line of research could be focused on Vallerand's (1997; 2001), hierarchical model of intrinsic and extrinsic motivation analyzing how different types of motivation coexist at all three levels of profiles. Studies are also needed to examine intervention projects or programs, with pre and post analysis, taking into account the selection of content, as mentioned above, and the performance of the PE teacher. An intervention to encourage student autonomy and task-oriented environment can be controlled by the teacher and the impact of feedback to the students.

## Conclusion

The present study shows the students in Secondary School have high intrinsic motivation, satisfaction and fun and the thinking that PE is very important for them, being however low desmotivation. Three possible motivational profiles were found in the students: 1) Cluster 1 – Moderate motivation Profile with high values of ego orientation and amotivation. This profile includes male students whose practice of physical activity is less than three hours for week; 2) Cluster 2 –Low motivation Profile - with high positive values of amotivation and boredom, and low scores of intrinsic motivation, fun and importance and usefulness of PE. This profile include correlated positively with girls and those who exercised less than 3 hours per week; 3) Cluster 3 –High motivation Profile-, with high values in intrinsic motivation, satisfaction, fun, task-orientation, importance of PE and extrinsic motivation. This cluster was positively associated with boys and those who exercise for more than 3 hours per week.

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### Key points

- High school students' motivation was mainly intrinsic, scoring very low on a motivation and high on satisfaction/fun; equally, these students were task-oriented.
- There appears to be a positive relationship between intrinsic motivation and task-orientation in high school students.
- The subject of PE is considered very highly by the students, and hence it obtains high values on satisfaction/fun and is positively associated with the importance given to PE.

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