

# Comparative study on pre-competition mood in Canadian and Spanish university students

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## ABSTRACT

The purpose of the study is to examine athletes' mood at Universidad de Vigo (Spain), and at Prince Edward Island University (Canada), with regards with sports performance before competition. 104 students from both universities took part in the study. To measure athletes' mood, the Profile of Mood States (POMS) scale was used. The results show that pre-competition mood distribution in athletes from both universities conform to an iceberg-type profile, as it is usually found in this kind of studies. Mood states are similar among all students, except for the fatigue factor, higher in Canadian students. Knowledge of pre-competition mood states is an essential tool to improve performance in athletes. **Key words:** POMS, SPORT, UNIVERSITY STUDENTS, SPORT LEAGUES.

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## INTRODUCTION

Physical fitness is essential in any sport, but psychological fitness plays a major, sometimes decisive, role. Studying psychological states will help to better know and monitor athletes. That means better chances to train athletes appropriately according to what is expected from them. Furthermore, we will be able to establish psychological benefits involved in sports and their impact on daily life (Liao et al., 2015).

The influence of psychological factors aiming at maximising performance in sport has been widely studied (García-Naveira & Díaz, 2010). Emotions and, more specifically, mood states, are an essential component in the psychological assessment of athletes (Catalán-Eslava et al., 2016). They are therefore key for enhancing sport performance (De la Vega et al., 2013; León-Prados et al., 2014), as they have an impact on how athletes perceive and face demands during preparation (Devonport et al., 2005; López, 2006; Barrios, 2007).

Sport and good mood are usually linked, as physical exercise enables endorphin generation, and leads to an increase in euphoria and satisfaction levels, which in turn helps people to be positive and feel well (Sungwoon & Jingu, 2007). That is why athletes' activity in competition is often determined by their mood. Emotions, feelings, affection are all variables which have a big impact when doing and valuing efforts (Torres-Luque et al., 2013).

Concepts such as affection, emotion, mood, feeling, emotional traits and temperament can overlap or blend in practice (De la Vega et al., 2013). It would seem obvious, therefore, that athletes' perception of their own mood may somehow influence performance to some extent (De la Vega, Ruíz et al., 2011; De la Vega, Almeida, et al., 2011; Jeong, 2008).

Recent research seems to have proved that the link between pre-competition mood and performance may draw upon variables such as the duration of the event, sport type, or even the place of the game or match (Brandt et al., 2016). Therefore, there are sport situations in which consistency or fluctuation in terms of mood become key information on how athletes react with regards to their performance (Calmeiro & Tenenbaum, 2007).

*Profile of Mood States* (POMS) is one of the widest used surveys to measure pre-competition mood states (McNair et al., 1971, 1992). It is the most popular tool in sport and physical activity (LeUnes & Burger, 2000). It has proved to be useful in many studies to predict athletes' performance on the basis of their mood features (Beedie et al., 2000; Palacios Moreno et al., 2015; Andrade et al., 2016).

Morgan (1980) states that positive mood and success in sports are significantly correlated. Thus, scores on different POMS factors point to patterns in mood which are characteristic of the most successful athletes. These patterns are called *iceberg profile* (Cox, 2009; Weinberg & Gould, 2007). The name is due to the fact that tension, depression, anger, fatigue, and friendship values are usually below the general population average, while scores in vigour tend to be above average (Morgan, 1980). This profile means the athlete will reach high performance, linked to optimal mood.

The purpose of this study is to establish pre-competition mood in athletes playing in university leagues at Universidad de Vigo (UVIGO) (Spain) and at University Prince Edward Island (UPEI) (Canada), compare mood states and devise strategies enabling interventions by sport psychologists.

## MATERIALS AND METHODS

The study followed a quasi-experimental design, with an interpretative approach and an accidental, unintentional sample of participants in university leagues.

### Participants

104 students from UVIGO and UPEI took part in the study. 64.3% of students from UVIGO are male and 35.7% female. 18.2% of students from UPEI are male, and 81.8% are female. Table 1 shows descriptive statistics of the sample.

Table 1. Descriptive statistics of the sample.

	UVIGO	UPEI
N	70	44
Male students	45	8
Female students	25	36
Age (years)	21.84±3.69	19.95±1.59

### Instruments

The selected instrument for the study was the *Profile of Mood States* (POMS) scale (McNair et al., 1992). It is used to measure feelings, affection and mood states. It was validated for the Spanish context by Andrade et al., (2013). It includes 30 adjectives, 5 for each factor (anger, fatigue, vigour, friendship, tension and depression). Values from 0 (none) to 4 (very much) were assigned to answers. Scale reliability is 0.913.

### Procedure

Data were collected during academic year 2015-2016. The POMS survey was distributed around 40 minutes before the competition. It was done before the informed consent given by athletes and heads of each team. The study was conducted in compliance with deontological standards in the Helsinki Declaration (Hong-Kong update, September 1989), and following EEC recommendations in Good Clinical Practice (document 111/3976/88 of July 1990).

### Data analysis

Descriptive statistics have been used for data analysis: central tendency (mean) and dispersion (standard deviation), as well as a Student's t-test. ANOVA has been applied to calculate differences between two numeric variables in mood between both university leagues at both universities, and variables in more than two categories: degree, selection, daily free time or supporters. Statistical effect size was added to the results of interactions between variables, based on Cohen's d, where 0.2, 0.5 and 0.8 values represent small, medium and big differences respectively (Cohen, 1988). For data interpretation and analysis the assumed confidence value was 0.05 ( $p < .05$ ). IBM SPSS Statistics (25.0 for MacOs) was used for data analysis.

## RESULTS

Regarding participants' features at both universities, more than half of UPEI students spend their free time doing sports, whereas less than 20% do so at UVIGO.

Table 2. Features of participants at UVIGO and at UPEI.

	Degree	%	Years of sport practice	Sport at school	% free time doing sport	Sport type
<b>UVIGO</b>	- Sport science	85.7	8.07±2.68	YES	18.6	Team sport
	- Fine arts	8.6				
	- Telecommunication	1.4				
	- Industrial	4.3				
<b>UPEI</b>	- Art	4.5	11.36±4.65	YES	63.6	Team sport 4 % individual
	- Psychology	13.6				
	- Biology	9.3				
	- Business	27.2				
	- Sport science	22.8				
	- Nursing	4.5				
	- Science	9				
	- Chemistry	4.5				
	- Sociology	4.5				

With regards to mood states, students at both universities conform to the iceberg profile. However the mean value for fatigue at UVIGO are lower, whereas it was higher for anger. (Figure 1).

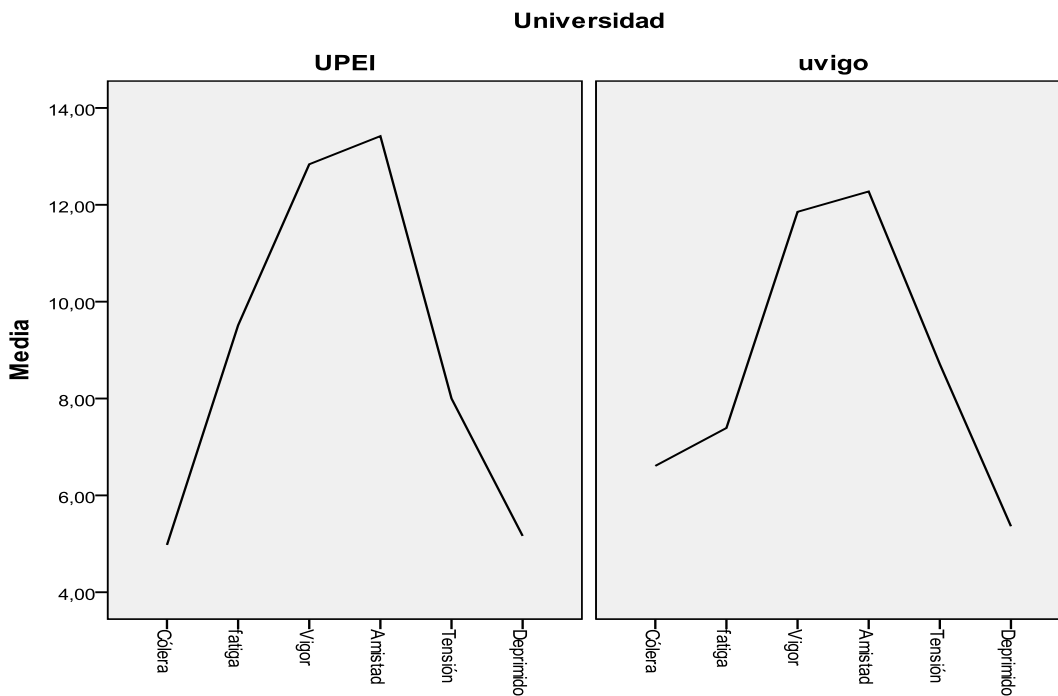


Figure 1. Mood profiles at each university (UPEI Y UVIGO).

Table 3 shows that mean values for vigour and friendship are higher than anger, tension and depression in leagues at both universities. Athletes' mood at both professional leagues is similar. Only in the fatigue factor do statistically significant differences exist ( $d=0.49$ ) between both universities.

Table 3. Mood descriptive statistics (UPEI and UVIGO).

		<b>N</b>	<b>Mean</b>	<b>Standard Dev.</b>	<b>Min</b>	<b>Max</b>	<b>p</b>	<b>Cohen d</b>
Anger	UPEI	44	4.9767	3.34869	1.00	14.00	.082	-0.36
	UVIGO	70	6.6087	5.47781	.00	20.00		
Fatigue	UPEI	44	9.4091	4.44772	1.00	20.00	.009	0.486
	UVIGO	70	7.3857	3.90575	.00	16.00		
Vigour	UPEI	44	12.9545	3.48388	4.00	18.00	.160	0.286
	UVIGO	70	11.8143	4.56925	.00	19.00		
Friendship	UPEI	44	13.4545	2.74035	7.00	19.00	.107	0.37
	UVIGO	70	12.3143	4.10564	1.00	20.00		
Tension	UPEI	44	7.8636	4.32726	.00	15.00	.334	-0.19
	UVIGO	70	8.7143	4.69086	.00	20.00		
Depressed	UPEI	44	5.1364	4.21840	.00	16.00	.871	-0.03
	UVIGO	70	5.3000	5.75930	.00	23.00		

As for the gender variable, no significant changes in mood exist between male and female studies at UVIGO, in any of the factors. However, higher depression values in male students and higher vigour values in female students have been found at UPEI. (Table 4).

Table 4. t Results by factor and gender at UPEI.

	<b>Gender</b>	<b>N</b>	<b>Mean</b>	<b>Standard dev.</b>	<b>t</b>
Vigour	Male	8	11.7500	5.47070	.017
	Female	36	13.2222	2.91901	
Depressed	Male	8	9.0000	6.00000	.000
	Female	36	4.2778	3.23915	

With regards to the year of studies for students at UVIGO, significant differences are only found in anger, whereas at UPEI, differences between students in different years of study are found in anger, fatigue, tension and depression (tables 5 and 6).

Table 5. ANOVA results by year at UVIGO

		<b>Sum of squares</b>	<b>gl</b>	<b>Root mean square</b>	<b>F</b>	<b>p</b>
Anger	Inter-group	264.069	3	88.023	3.221	.028
	Intra-group	1776.366	65	27.329		
	Total	2040.435	68			

Table 6. ANOVA results by year at UPEI.

		Sum of squares	gl	Root mean square	F	p
Anger	Inter-group	86.608	3	28.869	2.929	.046
	Intra-group	384.369	39	9.856		
	Total	470.977	42			
Fatigue	Inter-group	187.522	3	62.507	3.771	.018
	Intra-group	663.114	40	16.578		
	Total	850.636	43			
Tension	Inter- group	154.782	3	51.594	3.173	.034
	Intra- group	650.400	40	16.260		
	Total	805.182	43			
Depressed	Inter- group	159.318	3	53.106	3.506	.024
	Intra- group	605.864	40	15.147		
	Total	765.182	43			

## DISCUSSION

The purpose of the study was to assess mood states in university league athletes with different academic and sport aims, considering beneficial effects of physical exercise in mood (McLafferty et al., 2004; Taylor-Piliae et al., 2006, Sungwoon % Jingu, 2007), as well as mood influence on sport performance (Weinberg & Gould, 2007).

No significant differences in mood between both universities have been found, regarding factors in the POMS scale, except for in the fatigue factor, where UPEI students show a higher value. Mood impact vary depending on the level of competition. This would also explain differences in mean values for fatigue between both universities, as sport competition at UPEI is more demanding. This is supported by studies conducted by Barrios (2007) and Rietjens et al. (2005).

In their study, Arruza et al. (2011) showed that a perceived higher level of competition was negatively correlated with stress triggers, whereas correlation with stress recovery was positive. In addition, perceived competition was negatively correlated with fatigue. These data are consistent with those obtained in our study, where only differences in fatigue values have been found. Therefore, perceived competition is a nuclear and enabling element for psychological variables playing a major role in young athletes' performance. In line with previous studies, it is confirmed that regular practice of physical exercise has a significant positive impact on energy mood states and vigour (Olmedilla et al., 2008; Schwerdtfeger, Eberhardt et al., 2008). These data are in line with studies pointing to positive effects of physical exercise and to inverse correlation with depression (Moreno et al., 2008; Candel et al., 2008).

Distribution in both leagues conform to an iceberg profile (Morgan, 1980), previously described in literature for various competition sports (Torres-Luque et al., 2013). Several studies affirm that athletes typically show an iceberg profile before competition (Torres-Luque, et al., 2013; Terry & Lane, 2000), and when athletes with the same level of ability are compared (Beddie et al., 2000). Furthermore, it should be borne in mind that, at university, mood states may have a positive impact on other areas, such as relationships or academic work, as they are undertaken more enthusiastically (López et al., 2006). One of the main factors for athletes' victory or defeat is an appropriate, balanced mood profile, along with physical fitness and technical ability.

Hobbies or the amount of free time do not lead to significant differences at any university. Differences based on gender, degree or sport type have not been found at UVIGO. Only differences in anger are significant when taking into account the variable "year of study". This may be explained by a lack of competition in different sports or by success expectations. University leagues in Spain mainly aim at improving fitness to enhance sport technical level for competition and to represent the university. Academic work is linked to university sport, as credits are recognised for athlete students. In Canada, on the contrary, a high level training environment is pursued for athletes to represent the university both at home and abroad, and seeking excellent performance in competition. Thus, the main difference lies in the fact that in Canada, competition serves to strengthen the university. Therefore, at UPEI significant differences in factors exist for variables such as gender (vigour and depression), year of study (fatigue, tension and depression), degree (anger, vigour, friendship), and sport type (fatigue, vigour, tension and depression).

Regarding gender, previous studies show that women scores are below men only in vigour (Balaguer et al., 1993) or in tension (Jiménez et al., 2008). Boldizar et al., (2016) found significant differences by gender in their study with male gymnasts showing higher anger levels than female gymnasts. On the contrary, Fuchs & Zaichowsky (1983) did not find gender-based differences in any of the categories included in the POMS survey. In our study, no gender-based differences have been found at UVIGO, whereas at UPEI, women have higher values in vigour and men in depression. These results partially conflict with previous research, although it should be taken into account that our male sample is smaller.

## CONCLUSIONS

Although fully aware of the limitations of our study in terms of sampling, we believe that the results obtained allow for reflection on how important it is to gain better insight into athletes' mood, as the level of demand in university leagues at each university has an impact on athletes' mood states. Better knowledge of pre-competition mood has clear practical applications in the design and planning of comprehensive training programmes aiming at maximising sport performance, with strategies to make athletes aware of their emotions and of how they influence performance.

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