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## ORIGINAL

# RUNNER'S PROFILE AND PROPENSITY TO SPORTS INJURY

## EL PERFIL DE LOS CORREDORES Y SU PROPENSIÓN AL ACCIDENTE DEPORTIVO

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### ABSTRACT

This study evaluates relations between sociodemographic profile, injury rate and injuries's propensity of three sport events participants: *Zurich Marató de Barcelona*,

*Cros de Muntanya Can Caralleu & Marató Borredà-Xtrail*. The used method was an adaptation of scale of injury prone sports athletes (PAD-22) from Latorre y Pantoja (2013), administrated to 237 runners. The main results show that: runners tend to be mostly men, aged of 30-46 years, are salaried, have post-compulsory studies, have some experience in long distance events, train a mean of 4 times and more than 7 hours per week; and marathon asphalt runners have an overestimation of *Perceived Competence* and elevated grades of *Competitiveness*, more than trail runners.

**KEY WORDS:** trail races, injury propensity, prevention, risk of injury, runner's profile.

## RESUMEN

Se evalúa las relaciones entre el perfil sociodemográfico, la accidentabilidad y la propensión al accidente de los participantes en tres eventos deportivos: *Zurich Marató de Barcelona*, *Cros de Muntanya Can Caralleu*, y *Marató Borredà-Xtrail*. Una adaptación del cuestionario de propensión al accidente deportivo (PAD-22) de Latorre y Pantoja (2013) fue administrado a un total de 237 corredores. Los principales resultados muestran que: los corredores tienden a ser mayoritariamente varones, de entre 30 y 46 años, asalariados, con estudios postobligatorios, con experiencia previa en eventos de larga distancia, entrenan una media de 4 veces y un total de 7 horas a la semana; y los corredores de la maratón por asfalto tienen una sobreestimación de la *Competencia Percibida* y grados de *Competitividad* mayores a los corredores por montaña.

**PALABRAS CLAVE:** carreras por montaña, propensión al accidente deportivo, prevención, riesgo de lesión, perfil de corredores.

## INTRODUCTION

In recent years there has been a great increase in sports practice in natural environments (Clawson and Knetsch, 2013, Gonzalez and Mundina, 2014). This increase has been generated by the growing social tendency to practice sport in open spaces, such as mountains, rivers, sea, etc. up to 15.1% of the Spanish athlete population, and 24.1% of the Catalan practicing population claims to carry out physical activities within a natural environment (García Ferrando and Llopis, 2011).

The mountains have gone from being a space restricted to specialists, very well prepared physically, with a great knowledge and respect for its dangers and unpredictable conditions, to become a space without limits, open to anyone who is daring (2013).

The overall increase in running practice (Llopis and Vilanova, 2015) has led to the fact that this situation has been further strengthened by the increase in participation in so-called mountain races or trail races. For example, in 2008, 38 mountain races were held in Catalonia and in the year 2015 they reached 446;

This represents an increase of more than 1000% in 7 years (Runedia, 2016). This growth has consequently led to an increase in mountain injuries suffered by riders of various levels and backgrounds or even without any experience or preparation. In this line, it is observed how the number of rescues carried out in Catalonia by the *Grup de Recolzament d'Actuacions Especials* (GRAE) of the Catalan Firefighters has increased; 387 rescues were carried out in the mountains in 2010, becoming almost double, 755 rescues, in 2014 (Generalitat de Catalunya, 2015). The present study, in view of this alarming situation, seeks to identify the mountain corridors that present a greater propensity to the sporting accident, and, therefore, to the risk of suffering an injury, analyzing the influence of the type of race and the distance in which they participated, taking into account, also, sociodemographic variables. Regarding sex, for example, Byrnes, Miller, & Schafer (1999) suggest that men's risk-taking tendencies are higher than women's, with this difference being greater when it comes to physical abilities.

Thus, the main objective of this investigation is to relate the propensity to the sports injury of the runners analyzed with their sociodemographic characteristics and, above all, focusing our attention on the possible differences between the asphalt or mountain runners, as well as between a greater or less distance traveled.

## **THEORETICAL PERSPECTIVE**

There are several studies that explain the profiles of runners in different modalities. Hoffman and Fogard (2012), for example, draw the profile of ultramarathon runners by mountain: men with a high level of education, middle-aged, married, those who rarely lose days of work because of illness or injury; who often use vitamins and/or supplements, maintaining an appropriate body mass adjusted to their age. On the other hand, in popular races on concrete (Llopis & Llopis, 2012; Llopis & Vilanova, 2015) the runners are defined as: young people between 18 and 34 years old, with university studies, high or medium-high social class; in adventure raids (Baena, 2008) the majority profile is: males between 26 and 30 years old, single, salaried or physical education teachers, with university studies, belonging to a club, and who perform daily training and compete at national level. However, there are no studies that relate the profile of the riders to the propensity to the sporting injury.

In order to contextualize the study of propensity to sports injuries, it is important to understand that, on the one hand, there are many factors that cause sports injuries (Bahr and Krosshaug, 2005; Hanson, 1992; Heil, 1993; Meeuwisse, Tyreman, Hagel and Emery (2007), Andersen and Williams (1988) propose a predictive model of sports injuries that differentiates three major causal areas: personality, history of stressors and resources to face the risk of injury. Our study focuses on the analysis of psychological factors. Other works show the psychological factors of response to sports injuries, whose factors resemble those observed in predictive studies: cognitive, emotional and behavioral (Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998).

On the other hand, the concept of sports injuries, from the psychological perspective, is defined by the following components: dysfunction or functional disability produced during sports practice, intervention of the medical-health team,

and involvement in part or all of the training and / Or competition (low sports) (Palmi, 2014), however, the authors do not use the same definition, depending on being more or less demanding in the fulfillment of the above components. Therefore, and as Palmi (2014) points out, the definition of a sports injury used in this work is delineated, in which we understand sports injury as a functional disability or disability produced during sports practice without regard to intervention or not of medical doctors, nor the time of affectation or low activity.

There are many studies that try to identify different psychological constructs that define athletes. De la Vega, Rivera and Ruiz (2011) compare the levels of resistant personality of the participants in the Ultra Trail Aneto, of 78 km, and La Melonera, a popular race of 10 km; without finding significant differences among its participants, and without even determining that it was a factor influencing performance in ultra endurance races. Hashimoto, Hagura, Kuriyama, and Nishiyamai (2006) suggest that Japanese ultramarathon runners tend to be more introverted, make decisions based on their feelings, and are more environmentally minded than the rest of the Japanese population.

In line with the work carried out by Latorre and Pantoja (2013), 5 psychological dimensions have been defined that determine the possibility of suffering a sports injury:

1. *Sensation Seeking (SS)*: it is the personality trait defined by the search for experiences and feelings, which are varied, new, complex and intense, and willing to take physical, social, legal and financial risks to satisfy those experiences (Zuckerman, 1979, quoted in Zuckerman 2009) (Zuckerman, 2009). Many authors have done studies on SS using the Sensation Seeking Scale (SSS), developed by Zuckerman, Eysenck and Eysenck (1978). Gomà-i-Freixanet, Martha and Muro (2012) compile the studies that have used this tool for their application in various sports, in order to know what is the personality trait of athletes and their relation to the level of physical risk of the sport in question. Thus, we can observe that, for example, mountaineers are considered high-risk athletes when compared to marathonians, who are defined as low-risk athletes (Jack and Ronan, 1998). On the other hand, Hughes, Case, Stuempfle and Evans (2003) define the participants in ultramarathons as intermediate risk when comparing them with university students. Following the line of these studies, Osborn, Blanton and Schwebel (2009) concluded that athletes with high SS scores may be more likely to take risks and expose themselves to potentially dangerous situations more frequently than athletes with low SS scores; So they conclude that the greater the risk of risk taking, the greater the chance of suffering a sports injury.

2. *Assumption of risk (AR)*. Horvath and Zuckerman (1993) suggest that successful past experiences with AR can lead to reduced perceived risk, potentially increasing the likelihood of an athlete taking risks in sport. In this way, we can conceive AR as the trait that defines the conscious capacity of the subject to perform risky situations.

3. *Perceived competence (PC)*. Self-efficacy and perceived competition may influence perceived risk and risk-taking. In particular, Bandura (1997) suggests that athletes who exhibit high self-efficacy are more likely to attempt difficult skills, therefore, they are more likely to take risks in sport. Thus, some individuals may overestimate their capacity or perceive themselves more capable than they really are (Latorre and Pantoja, 2013). An overestimation of the capacity can lead to erroneous judgments (Bandura, 1986) and, therefore, to behaviors of greater risk. By means of a Bayesian analysis to determine the relevant variables of the sports injury Garcia-Mas, Pujals, Fuster-Parra, Núñez and Rubio (2014), indicate that a high probability of self-efficacy produces statistical dependence of more probability of sports injury. Therefore, we understand the PC as the degree of self-knowledge and acceptance of one's own qualities and limits.

4. *Perception of risk (PR)*. Kontos (2004) emphasizes that the perception of risk, the acceptance of the risk and the estimation of the own capacity represent important psychological risk factors for the sports injuries of the adolescents. In addition, subjects with high levels of risk taking, low levels of perceived risk and low levels of skill estimation present an increased risk of injury (Kontos, 2004). Chamarro, Rovira and Fernández-Castro (2010), in their work focused on hikers, indicate that in determining the level of concern (as a PR measure), difficulty and haste are interactively combined and that these variables, as a block, interact in turn with fatigue, and with confidence. In this way, the PR factor defines the degree of identification of risk situations.

5. *Competitiveness (COMP)*. Competitive anxiety may be a predisposing factor to injury (Olmedilla, Andreu, Ortin and Blas, 2009). In this sense, Maddison and Prapavessis (2005) indicate that high competitive anxiety, in a situation of stress, causes more risk of injury. In relation to this factor, Llopis and Vilanova (2015) affirm that the runners present a greater degree of competitiveness than of interest for the search of adventure or for the evasion. Thus, the COMP refers to the effort of a person to master a task or to achieve excellence and motivation focused towards the achievement of goals in the sports field (Prieto, Labisa and Olmedilla, 2014). Thus, we conceive COMP as the factor that induces the athlete to focus on which is better for others, to risk and to lose the main objective of their performance.

## METHODOLOGY

### Participants

The sample used in the present study consisted of a total of 237 subjects aged between 17 and 60 years ( $38.37 \pm 8.37$ ), of which 183 subjects were men (77.2%) and 54 women (22.8%). This is a non-probabilistic sample, for convenience, obtained in 3 different races. As can be seen in the following Table 1, 6 groups are distinguished, which belong to the different distances organized in each event: two groups of Cros de Muntanya Can Caralleu (7.5 km and 15 km); three groups of the Borredà-Xtra Marathon (11 km, 28 km and 44 km); and the sixth group consists of the participants of the Zurich Marató de Barcelona (42 km).

**Table 1.** Sample characteristics.

Races	Distance	n	Age		Men		Women	
			Mean	ST	n	%	n	%
<i>Cros de Muntanya Can Caralleu</i>	7,5 km	24	40,17	6,86	16	66,7	8	33,3
	15 km	72	39,5	8,21	59	81,9	13	18,1
	Total Caralleu	96	39,67	7,86	75	78,1	21	21,9
<i>Borredà-Xtrail</i>	11 km	13	37,46	10,97	7	53,8	6	46,2
	28 km	36	36,36	8,89	26	72,2	10	27,8
	44 km	47	36,21	7,66	40	85,1	7	14,9
	Total Borredà	96	36,44	8,54	73	76	23	24
<i>Zurich Marató de Barcelona</i>	42 km	45	39,7	8,44	35	77,8	10	22,2
Total sample		237	38,37	8,37	183	77,2	54	22,8

### Socio-demographic profile and sample of injury history

In Table 2, the results of the items related to the socio-demographic profile of the runners are presented. In addition to data on the sex and age of the participants, found in Table 1. Characteristics of the sample., It can be observed that: in reference to the labor situation, the majority are employed by others (57, 4%), civil servants (11.8%) self-employed (9.3%); (36.7 per cent), vocational training (21.5 per cent) and postgraduate (19 per cent); Most have previous experience in long distance events (78.5%); they perform an average of 4 workouts a week in the last 3 months; training an average of more than 7 hours per week. Regarding the history of injuries, it can be observed that the mean of injuries in the last 3 years is  $1.51 \pm 1.97$  and of  $0.51 \pm 0.99$  in the last 3 months.

**Table 2.** Socio-demographic profile from sample

	<i>Cros de Muntanya Can Caralleu</i> (n=96)	<i>Borredà-Xtrail</i> (n=96)	<i>Zurich Marató de Barcelona</i> (n=45)	Total sample (n=237)	
Labour n (%)	Student	2 (2,1)	10 (10,4)	2 (4,4)	12 (5,9)
	Unemployed	1 (1,0)	3 (3,1)	2 (4,4)	6 (2,5)
	Civil servant	11 (11,5)	11 (11,5)	6 (13,3)	28 (11,8)
	Freelance	9 (9,4)	9 (9,4)	4 (8,9)	22 (9,3)
	Employee	65 (67,7)	50 (52,1)	21 (46,7)	136 (57,4)
	Entrepreneurs	4 (4,2)	5 (5,2)	6 (13,3)	15 (6,3)
	Professional sportmen	0 (0)	1 (1,0)	0 (0)	1 (0,4)
	Others	4 (4,2)	7 (7,3)	4 (8,9)	15 (6,3)
Highest education achieved n (%)	Basic studies	9 (9,4)	9 (9,4)	4 (8,9)	22 (9,3)
	Diploma	19 (19,8)	21 (21,9)	11 (24,4)	51 (21,5)
	Baccalaureate	13 (13,5)	10 (10,4)	6 (13,3)	29 (12,2)
	University studies	38 (39,6)	33 (34,4)	16 (35,6)	87 (36,7)
	Post graduate studies	15 (15,6)	22 (22,9)	8 (17,8)	45 (19)
	PhD	2 (2,1)	1 (1,0)	0 (0)	3 (1,3)
	Others	0 (0)	0 (0)	0 (0)	0 (0)
Previous experience n (%)	Sí	61 (63,5)	89 (92,7)	36 (80)	186 (78,5)
	No	35 (36,5)	7 (7,3)	9 (20)	51 (21,5)
Training in last 3 months (sessions per week). Mean±SD	3,54±1,53	4,22±2,11	4,76±2,17	4,05±1,96	
Training in last 3 months (sessions per hours). Mean±SD	5,56±3,53	8,60±7,42	8,53±5,16	7,35±5,86	
Injuries 3 years, Mean±SD	1,38±2,30	1,85±1,89	1,07±1,10	1,51±1,97	
Injuries 6 months, Mean±SD	0,51±1,19	0,61±0,92	0,27±0,50	0,51±0,99	

### Technique

The data collection technique used to measure the propensity to sports injuries has been the PAD-22 scale of Latorre and Pantoja (2013). It is a self-report questionnaire composed of 22 items that describe variables that condition the possibility of suffering a sports injury (Latorre and Pantoja, 2013). The subject must answer the questions according to their level of agreement with the sentences, following a Likert scale, from 1 to 6, being 1, strongly disagree and 6, strongly agree.

The Latorre and Pantoja scale (2013) showed reliability, with good internal consistency with a Cronbach alpha coefficient equal to .82, and adequate content and factorial validity.

For the adaptation of the questionnaire, the elaboration steps of Latorre and Pantoja (2013) were complemented. We reviewed the work related to the

psychological factors and personality of the subject that condition the injury in sport. Subsequently, the content of the adaptation of the questionnaire was validated, requesting a critical judgment from a group of four experts from the field, with research experience in the field of sports injuries.

Finally, the 22 items of the work of Latorre and Pantoja (2013) were maintained, based on the mentioned dimensions: Sensation Seeking (SS), Assumption of Risks (AR), Perceived Competence (PC), Risk Perception (RP) and Competitiveness (COMP). The SS factor is formed by 6 items of the questionnaire, while all the others are composed of 4 items each.

In addition, questions were added to the questionnaire to define the sociodemographic profile, sports habits and the number of injuries of the subjects in the sample. On the one hand, questions related to sociotype variables were added: year of birth, gender, place of habitual residence, work dedication and studies reached; On the other hand, variables to know their sports habits: previous experience in participation in long distance events, training frequency - number of sessions and average hours of training per week; And, finally, the number of injuries suffered in the last 3 years and in the last 6 months.

### **Administration procedure**

Prior to the administration of the questionnaires, the subjects were informed of the confidentiality of their answers, as well as the voluntary nature of their participation, consenting to the treatment of the information provided with the fulfillment of the questionnaire, being guaranteed anonymity at all times. The questionnaire was self-administered, with small differences according to the analyzed events: the subjects of the Zurich Marató of Barcelona were administered the questionnaire at the end of the race, by small groups and in the presence of a researcher or collaborator of the study; To the subjects of Cros de Muntanya Can Caralleu, they were administered the questionnaire on the day of collection of dorsal and the same day of the race; The subjects of the Borredà-Xtrail Marathon were administered the online questionnaire using the Google Forms tool (Google Inc. Mountain View, USA). The duration of the questionnaires was approximately 8 minutes per participant.

### **Statistical analysis**

For the data analysis, we used the statistical program SPSS., V.18.0 for Windows, (SPSS Inc, Chicago, USA). The assumption of normality of the sample is assumed, and as a consequence parametric tests are performed. Descriptive statistics (means, SD), correlations (Pearson) and mean differences (ANOVA and Test t) were used, using as a covariate the gender in the comparison of the groups of athletes. The level of significance was  $p < .01$ .

## RESULTS

### Factors of propensity to sports injuries, total propensity value and frequency of injuries

In Table 3, a significant correlation between the factors and the total resulting value of propensity to sporting injury can be observed. Although it was not possible to identify a significant correlation between the factors and the history of injuries of the subjects, there is a correlation between the total value of the accident propensity and the number of injuries suffered in the last 6 months.

**Table 3.** Pearson correlation between factors, accident propensity and injuries.

	SS	AR	PC	PR	COMP	Total PAD-22	L3A	L6M
SS	1	,333**		,527**		,795**		
AR		1		,363**		,584**		
PC			1	,295**	,460**	,570**		
PR				1	,244**	,727**		
COMP					1	,602**		
PAD						1		,241**

\*\* $p < 0,01$ . Sensation Seeking (SS). Assumption of risks (AR). Perceived competence (PC). Perception of risk (PR). Competitiveness (COMP). Propensity to sport injury (PAD-22). Number of injuries last 3 years (L3A). Number of injuries last 6 months (L6M).

### Relationship between factors of propensity to the accident, total propensity value, careers, distances, gender and other socio-demographic factors

Table 4 shows the means of propensity factors and the total propensity value of each race, and the comparison by races of the mean factors and total values. Not significantly, it is observed that the runners of Cros de Muntanya Can Caralleu score lower in SS, PC and PR. The corridors of the Borredà-Xtrail tend to obtain higher values in SS, AR and PR, in comparison with the other groups; And the subjects of the Zurich Marathon of Barcelona present higher scores in PC, COMP and the total value of PAD-22, and values lower than RA, when compared to the participants in the other races. There were significant differences ( $p < .05$ ) in the dimensions of PC and COMP. In the comparisons in pairs by Bonferroni adjustment, significant differences ( $p < .05$ ) were found between the participants in the Zurich Marató of Barcelona and those of Borredà-Xtrail in the dimension of COMP, while the runners of the Marató de Barcelona present a higher score. In the PC dimension, participants of the Barcelona Marathon in relation to the corridors of Cros de Muntanya Can Caralleu obtain higher values of COMP ( $p < .05$ ); As in the Borredà-Xtrail with respect to the Barcelona Marathon ( $p < .05$ ).

**Table 4.** PAD-22 scale by races.

	<i>Cros de Muntanya Can Caralleu</i> (n=96)		<i>Borredà-Xtrail</i> (n=96)		<i>Zurich Marató de Barcelona</i> (n=45)		F
	M	SD	M	SD	M	SD	
SS	17,23	6,71	19,19	7,07	17,38	6,67	2,23
AR	6,8	3,23	7,13	3,61	6,38	3,56	0,73
PV	9,23	2,93	9,45	2,58	10,8	3,96	4,39*
PR	8,47	3,68	8,82	3,43	8,67	4,68	0,21
COMP	9,83	4,21	9,04	3,91	11,33	5,11	4,40*
Total PAD-22	51,56	13,81	53,63	14,06	54,56	17,24	0,81

Data expressed as mean (M) and standard deviation (SD). Sensation Seeking (SS). Assumption of risks (AR). Perceived competence (PC). Perception of risk (PR). Competitiveness (COMP). Propensity to sport injury (Total PAD-22). \* P <.05.

In Table 5, the average values of the factors of propensity to sport injury and the total of the factors by distances, and the comparison between them, are shown in detail. Not significantly, it is observed that: as the distance of the race of the Borredà-Xtrail (11 km, 28 km and 44 km) increases, the SS increases, while the remaining distances have values lower than these. In relation to the AR factor, it is the riders of distances over 40 km that gets along with the distance 7.5 km, scores lower than the rest. As far as PR is concerned, there is a tendency to obtain higher scores as the distance traveled increases, with the exception of the 28 km participants, who have values above the rest. For the total values of PAD-22, it is observed that as the distances increase, they tend to increase these values, with the exceptions of the participants in the 11 km and 42 km. There were significant differences (p <.05) in the dimensions of PC and COMP. Runners tend to get higher scores in PC as the distance of the race in which they participate increases, with the exception of participants in the distance of 44km, who get values lower than those of 28km and 42km. Regarding the COMP factor, the subjects who obtain lower values, in ascending order, are 28km, 7.5km and 44km; In the remaining cases, they obtain higher scores as the distance increases.

**Table 5.** PAD-22 scale by distance.

	7,5 km (n=24)		11 km (n=13)		15 km (n=72)		28 km (n=36)		42 km (n=45)		44 km (n=47)		F
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
SS	17,33	7,94	18,15	6,56	17,19	6,31	18,58	7,42	17,38	6,67	19,94	7,01	1,11
AR	6,21	2,7	7,46	4,01	7	3,39	7,78	4,21	6,38	3,56	6,53	2,93	1,05
PC	8,33	2,9	9,38	2,53	9,53	2,9	10,03	3,11	10,8	3,96	9,02	2,06	2,80*
PR	7,79	3,79	8,15	3,24	8,69	3,64	9,14	3,38	8,67	4,68	8,77	3,56	0,42
COMP	8,75	4,16	10,08	5,04	10,19	4,19	8,72	3,46	11,33	5,11	9	3,93	2,36*
Total PAD-22	48,42	16,49	53,23	16,51	52,61	12,76	54,25	14,32	54,56	17,24	53,26	13,45	0,64

Data expressed as mean (M) and standard deviation (SD). Sensation Seeking (SS). Assumption of risks (AR). Perceived competence (PC). Perception of risk (PR). Competitiveness (COMP). Propensity to Sports injury (Total PAD-22). \* P <.05.

Table 6 shows the mean values of the PAD-22 factors according to gender, comparing the two. Males generally showed higher scores than females, with significant differences with  $p < .005$ , in the SS dimensions and in the total resulting value of injury propensity, and with  $p < .01$  in the PR dimension. Not significantly, there is a tendency for men to have higher values in AR and COMP than women, on the other hand, are the women who obtain higher scores in PC.

**Table 6.** PAD-22 scale by gender.

	Male (n=183)		Female (n=54)		F
	M	SD	M	SD	
SS	18,87	6,69	15,28	6,89	11,85**
AR	7,06	3,49	6,15	3,24	2,94
PC	9,55	3,01	9,83	3,27	0,35
PR	9,01	3,79	7,43	3,49	7,54*
COMP	9,97	4,35	9,2	4,29	1,31
Total PAD-22	54,46	14,39	47,89	14,3	8,73**

Data expressed as mean (M) and standard deviation (SD). Sensation Seeking (SS). Assumption of risks (AR). Perceived competence (PC). Perception of risk (PR). Competitiveness (COMP). Propensity to sport injury (Total PAD-22). \*  $P < .01$ . \*\*  $P < .005$

In relation to the other sociodemographic variables analyzed, there were no significant differences between factors, nor are there any significant differences in the socio-demographic items and the history of injuries in the different races or distances.

## DISCUSSION

The aim of this study was to identify mountain runners who are more prone to sports injury, analyzing the influence of the type of race and the distance in which they participate, as well as gender and other sociodemographic factors.

The descriptive analysis of the sample allows an approximation to the sociodemographic and sport profile of the runners. Usually, they are men between 30 and 46 years old, salaried, with university studies, professional training and / or postgraduate, with previous experience in long distance events, they train an average of 4 times and a total of 7 hours a week. These data coincide in general with studies on the profile of participants in popular races (Llopis and Llopis, 2012; Llopis and Vilanova, 2015), as well as in the study of the profile of participants in adventure raids (Baena, 2008), And being even closer to the profile study of Hoffman and Fogard (2012) ultramarathon runners.

The results obtained using the PAD-22 scale, depending on the races, suggest that the marathon runners on asphalt differ from the runners per mountain in terms of PC and COMP; The asphalt marathon runners obtained higher PC scores and, therefore, would be more likely to perform risky behaviors, corresponding to Bandura (1997). On the other hand, it is also the marathon runners on asphalt that have the highest degree of COMP and, therefore, a greater propensity to the sporting injury. The results obtained coincide with those presented by Llopis and Vilanova (2015), reaffirming that marathon runners give more importance to the

fact of competing than to the search for new sensations, as compared to mountain runners.

Compared to the study done on players of rugby, volleyball and recreational sport of Latorre and Pantoja (2013), the scores in the different dimensions have been in all the lower cases, except in a single case: the PC factor, in which Participants in the asphalt marathon get a higher score than Volleyball practitioners. This data suggests that mountain runners and marathon runners are less likely to have a sports injury than rugby, volleyball and recreational sports players. In this line, according to the compilation of Gomà-i-Freixanet et al. (2012), mountain and asphalt runners are considered to be low-risk athletes, compared to mountaineers, considered to be at high risk (Jack and Ronan, 1998) and with participants in the Ultramarathon of Idiasport, Intermediate risk (Hughes et al., 2003).

Regarding the consideration of other sociodemographic variables, no significant differences were found that show a comparative relationship between the different factors analyzed, although it has been found a certain type of correlation according to sex, where the values in COMP of the runners Men are higher than those of women, confirming the results obtained in previous related studies (Acevedo, Dzewaltowski, Gill and Noble, 1992; Gill, Williams, Dowd, Beaudoin and Martin, 1996). It is also so in the study on different sports of Latorre and Pantoja (2013); In this, in addition, a difference in SS is suggested, greater in men than in women. Our study does not show significant differences between men and women in COMP, but it does in the SS dimension, in which men show higher values than women, in the same way as in the PAD-22 Total. This allows us to corroborate, in the line of previous studies (Byrnes, Miller and Schafer, 1999), that men are more prone to sports injury than women.

## CONCLUSION

The present study has allowed us to analyze the propensity for sports injuries according to the type of races and distances involved, being able to also compare the runners of a marathon on asphalt with the runners of a marathon per mountain. We have been able to verify how the runners of the marathon by asphalt have an overestimation of the PC and degrees of COMP greater than those of the mountain runners; and, on the other hand, men pursue SS more and are more prone to sports injuries than women.

No significant relationship has been found between the results obtained on the PAD-22 scale (Latorre and Pantoja, 2013) and the history of athletes' injuries, but a relationship between the total PAD-22 scale and The number of injuries in the last 6 months; In this way, it is considered that, although the sample could be increased to assert it more reliably, the scale could offer us an approximate forecast of the propensity to sport injury.

The study suggests that participants in the asphalt marathon tend to be more likely to have an injury than mountain runners, experiencing significant differences in PC and COMP as the highest scoring dimensions for runners in the asphalt marathon. In addition, we can conclude that the participants, both trail running and running on asphalt, tend to have a low propensity for the injury, since both runners per

mountain, regardless of the distance they travel, and marathon runners on asphalt get lower values in the different dimensions of propensity to the injury than those of the sample of rugby, volleyball or recreational sports of the study of Latorre Román and Pantoja Vallejo (2013).

On the other hand, the study suggests that men participate more in this type of events for reasons of SS and, generally, are more prone to the sporting injury.

In relation to the limitations of the present study that generate future lines of work, it is considered that it would be necessary, as Latorre and Pantoja, 2013, to accurately follow the accidents and injuries of athletes, in order to be able to verify greater concordances with the PAD-22 scale. On the other hand, it would be interesting to be able to extend these results to a greater sample, to make their representativeness plausible, as well as to extend the study to runners of longer distances, taking into account the great upsurge of the ultradistance races in mountain.

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