

Article

Risk of dependence on sport in relation to body dissatisfaction and motivation

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Abstract: The aim of the research was getting to know the risk of dependency on physical exercising in individual sportspeople and the relationship with body dissatisfaction and motivation. 225 triathletes, swimmers, cyclists and athletes- with ages going from 18 to 63 years old took part in the research, of which 145 were men (M = 35.57 ±10.46 years) and 80 women (M = 32.83 ±10.31 years). The EDS-R was used to study the dependency on exercising, BSQ to study body dissatisfaction, BREQ-3 to know the motivation of participants and BIAQ to analyse conducts of avoidance to body image. The obtained results show that 8.5% of the subjects had risk of dependency on exercising and that 18.2% tend to have corporal dissatisfaction, without meaningful differences in the kind of sport they practiced. However, there were important differences concerning the dependency on physical exercise (15% vs 4.8%) and body dissatisfaction (31.1% vs 11%) in relation to sex, being the higher percentage referring to women. The introjected regulation and the conduct of food restriction were the predictor variables of the dependency on exercising and corporal dissatisfaction.

Keywords: addiction; triathletes; body image; behavior regulation

1. Introduction

Nowadays, the multitude of benefits associated with the practice of a sport or physical exercise on a regular basis is known on a physical, psychic, aesthetic and social level [1,2,3,4]. However, in recent decades some new research has emerged on the addiction that sport can create, having negative consequences not only at a physical or physiological level (e.g., abstinence, tolerance) but also psychological (e.g., anxiety, depression) or behavioural (e.g., reduction of other activities) [5,6,7].

First, the term addiction or dependence in relation to physical exercise was not given negative conjectures. Glasser [8] referred to exercise as a positive addiction, in relation to the health benefits it had, stating that it was as addictive as pleasant. But Morgan [9] studied and recognized the negative effects that could appear with sport addiction such as injuries, over-training, social isolation or psychological problems.

Therefore, Ogden, Veale and Summers [10] define the dependence on physical exercise (DPE, hereafter) as a combination of biomedical characteristics similar to those of addictions such as withdrawal symptoms and stereotyped behaviour in addition to other psychosocial aspects such as interference with social/family life and positive gratifications. Research in this line, such as that of Sussman, Lisha, and Griffiths [11] has found similarity between sports addiction and drug addiction.

The addiction to sport is manifested by an influence and abuse of it in the day to day leaving aside other factors of life. Whiting [12] concluded that the non-practice of sports during some days generated anxiety, abstinence, as well as physical and moral discomfort in those athletes with symptoms or risk of DPE.

Several studies associate DPE with eating disorders and body disorder or dissatisfaction (BI, hereafter) [7,13,14] in relation to a greater body care or maintaining a good physical appearance, sometimes even exceeding the limits, having athletes to include habits, behaviours or thoughts that distort their body image [15].

An important aspect to take into account in sports practice is motivation and its relationship with the theory of self-determination [16] which can show us how much motivation exists and what kind of motivation leads us to practice sports. This motivation may be related to the DPE, either as a predecessor or as a consequence thereof [17, 18].

Sex or age, as well as the sport practiced or the body mass index (BMI, hereafter) are aspects to be pointed out as factors that are related to DEP, CI or motivation [19,20,21]. More and more studies and research are on this addiction to sport and what factor or factors it may be related to. In fitness centres [17] they obtained that 7% of their members could be considered at risk of exercise dependence. Regarding individual sports Ruiz-Juan and Zarauz [22] studied Spanish marathoners, who showed a medium-high addiction to training. Blaydon and Lindner, and also Youngman [13,23] in an investigation with triathletes concluded that they were 30.4% and 19.9% respectively, who could have addiction or DPE. On his behalf, Latorre et al. [24] obtained that the prevalence of DPE in different endurance sports (triathlon, swimming, cycling and athletics) was 13.6%, with triathletes having the highest DPE.

On the other hand, and in relation to sex, the results are not very clear since Guskowska and Rudnicki [25] obtained that the male sex was more addicted to sport than the female, however, Youngman [23] concluded that girls were who had the highest DPE, but without significant differences.

Nevertheless, despite what we know today, for Forte and Ferreira; Ruiz-Juan and Zarauz [26,27] there are still many gaps to learn more about sports addiction or DPE, as well as which sport carries a higher risk of DPE or BI in case it exists and how these variables interweave with personal and motivational differences. On the other hand, the studies carried out usually take students or gym clients as participants, and the DPE has been a little investigated, for example, with outdoor sports.

Therefore, and based on the reviewed studies, this research aims to a) compare the current state of triathlon and the sports that compose it (swimming, cycling and athletics) b) know and study the differences among the DPE, the BI and the motivation of individual sports according to modality and sex; c) establish the relationship between the DPE and the BI together with motivation, conducts of avoidance of the BI, age, BMI and the duration and number of sessions.

2. Materials and Methods

2.1. Participants

225 athletes aged between 18 and 63 years participated in the study, of whom 145 were men ($M = 35.57 \pm 10.46$ years) and 80 women ($M = 32.83 \pm 10.31$ years). The selected sample consists of swimmers, cyclists, background athletes or triathletes at competitive amateur level and were consulted in different races at the Andalusian level. Being of legal age, performing at least 3 training

sessions per week and being active at this time were the parameters of inclusion in the research process.

2.2. Instruments

The "Exercise Dependence Scale-Revised" (EDS-R) [28], Spanish version of Sicilia and González-Cutre [29] was used. The scale is composed of 21 items that allow to obtain a global score in dependence (as this score increases there is a greater risk of dependence) and a scoring for each of the seven symptoms that define it. The questionnaire is headed by the statement "In the fitness centre ..." and the responses are presented in the Likert format from 1 (never) to 6 (always). The subscales are: abstinence (*e.g., I practice physical exercise to avoid feeling in bad humour*), continuation (*e.g., I practice exercise despite repeated physical problems*), tolerance (*e.g., I constantly increase the intensity of my physical practice to achieve the desired benefits or effects*), lack of control (*e.g., I am unable to reduce the total time that I practice physical exercise*), reduction of other activities (*e.g., I would like to practice more physical exercise than being with my family and friends*), time (*e.g., I dedicate much time to practicing physical exercise*), time (*e.g., I spend a lot of time on physical practice*), and desired effects (*e.g., I practice physical exercise for longer than I usually want*). In this study, an internal consistency coefficient (Cronbach's alpha) = .92 was obtained.

The scale also allows to classify the practitioners of physical exercise in three groups: at risk of dependence (scores 5-6 in at least three of the seven criteria), symptomatic non-dependent (scores 3-4 in a minimum of three criteria, or scores 5-6 combined with scores 3-4 in three criteria, but without meeting the conditions of at risk) and asymptomatic non-dependent (scores 1-2 in at least three criteria, but without actually meeting the conditions of the symptomatic non-dependent).

The Body Shape Questionnaire (BSQ) [30] was also used, and adapted to the Spanish population by Raich et al., [31] for the analysis of body satisfaction. It is a questionnaire formed by 34 items that are evaluated by the following scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very often, 6 = Always), so that the test range is 34-204. Following Cooper and Taylor (1988), from the total BSQ score of > 80 BI risk is established. In this study we obtained an Alpha value of Cronbach = .96

To analyse the motivation towards sport, we used the Behaviour Regulation in Exercise Questionnaire (BREQ-3) [32] and in its Spanish version of González-Cutre, Sicilia and Fernández, [33], composed of 23 items which are divided into 6 factors. The questionnaire is headed by the statement "I do physical exercise ..." and the answers are presented in a Likert format from 0 (not true) to 4 (totally true). The dimensions that make up the questionnaire are: intrinsic regulation (*e.g. Because I think exercise is fun*), integrated regulation (*e.g. Because it is in accordance with my way of life*), identified regulation (*e.g. Because I value the benefits of physical exercise*), introjected regulation (*e.g. "Because I feel guilty when I do not practice it"*), external regulation (*e.g. Because the others tell me I should do it*) and de-motivation (*e.g. I do not see why I have to do it*). In this study we obtained an internal consistency coefficient (Cronbach's alpha) = .642 for the regulation of behaviour in the exercise.

Finally, the BIAQ measures the behavioural aspect of the BI [34]. It consists of 19 items, in which different behaviours of avoidance related to body appearance are collected. The response scale is Likert type, with options from 1 (never) to 5 (always). The items are grouped into four subscales, which evaluate behaviours of avoidance related to (1) the way of carrying clothes (items: 1, 2, 3, 4, 13, 15, 16, 17 and 18) (*e.g. I wear very loose clothes*), (2) social activities (items: 8, 9, 10 and 11) (*e.g. I do not go to social gatherings if this involves eating*), (3) restriction of food (items: 5, 6 and 7) (*e.g. Fasting for a*

day or more) (4) and a subscale with which we intend to measure checking behaviours (items: 12, 14 and 19) (e.g. *I look myself in the mirror*). To interpret the scores, it must be taken into account that high scores indicate a greater frequency of behaviours of avoidance due to BI. In relation to the reliability of the scale, Cronbach's alpha was .79 for the total score on the scale in the original study.

2.3. Process

The participants signed an informed consent in which they were briefly informed of the type of study that was being carried out, that the answers were anonymous and confidential, the voluntary participation and that the results were available to them at the end of the investigation. The EDS-R, the BSQ, BREQ-3, BIAQ and a data questionnaire referring to different sociodemographic variables were provided. The data was collected in different competitive events at the Andalusian level (Andalucía triathlon championships (medium and Olympic distance), Andalusian cycling circuit, open water swimming events, popular races.

2.4. Analysis of data

First of all, the descriptive statistics (mean, standard deviation and percentages) of the sample are shown. The t-test for independent samples and the Chi-square test were used by means of a contingency table in categorical variables to analyse the homogeneity of groups in relation to sociodemographic characteristics. For the comparison of groups, analysis of variance (ANOVA) with post hoc test was performed by means of Tukey adjustment for sample with equality of variance and Games-Howell in those that had different variances, carrying out in this case a robust Welch analysis. In addition, the percentage of practitioners who could be considered as asymptomatic non-dependent (AND), symptomatic non-dependent (SND), and at risk of dependence (RD), with the total sample and with each of the sports was calculated. Similarly, the sample was studied to determine the risk of BI. On the other hand, the same analysis of variance with a segmentation by sport and sex for its study. We also used a Pearson correlation analysis between the variables and a multiple linear regression with the DPE and the BI as dependent variables. The level of significance was established at $p < .05$. The statistical analysis of the data was performed through the statistical program SPSS, V.24.0 for Windows, (SPSS Inc., Chicago, USA).

3. Results

Table 1 describes the results obtained from the relationship among the different sociodemographic variables and the practiced sport modality. It is observed that there are significant differences in age, swimmers being the youngest; in occupation, where the triathletes have their job as occupation and the level of studies, being the triathletes the ones who have higher percentage in higher studies; years of training with swimmers with a greater percentage of more than 10 years of training, even being the youngest and cyclists; the condition of federated, being greater in swimmers and triathletes than in the other two modalities, in the same way swimmers and triathletes are those who dedicate more sessions being the cyclists who more time spend in training. Finally, swimmers are those who have a coach in relation to other sports.

Table 1. Sociodemographic characteristics in relation to the practiced sport modality.

		Swimming (n = 60)	Cycling (n = 56)	Athletics (n = 47)	Triathlon (n = 62)	p-value
Gender (%)	Males	36 (60)	40 (71.4)	30 (63.8)	39 (62.9)	.619

	Females	24 (40)	16 (28.6)	17 (36,2)	23 (37.1)	
Age (SD)		29.18 (10.58)	35.55 (11.49)	38.04 (10.11)	36.35 (7.49)	< .001
BMI (kg/m ²)		23.09 (3.09)	21.97 (2.47)	22.43 (2.11)	22.20 (1.68)	.071
Mean (SD)						
Employment (%)	Work	30 (50)	45 (80,4)	35 (74,5)	56 (90,3)	< .001
	Not work	2 (3.3)	1 (1.8)	6 (12.8)	0 (0)	
	Student	28 (46.7)	9 (16.1)	6 (12.8)	5 (8.1)	
	Retired	0 (0)	1 (1.8)	0 (0)	1 (1.6)	
Educational level (%)	Without studies	0 (0)	0 (0)	0 (0)	0 (0)	.006
	Primary studies	1 (1.7)	10 (17.9)	8 (17)	3 (4.8)	
	Secondary studies	18 (30)	13 (23.2)	16 (34)	12 (19.4)	
	Higher studies	41 (68.3)	33 (58.9)	23 (49)	47 (75.8)	
Civil status (%)	Single	28 (46.7)	18 (33.1)	21 (44.7)	26 (41.9)	.081
	Married	15 (25)	24 (42,9)	22 (46.8)	26 (41.9)	
	Widower	0 (0)	0 (0)	0 (0)	1 (1,6)	
	Couples	17 (28,3)	14 (25)	4 (8,5)	9 (14,5)	
Years of training (%)	1 to 3 years	9 (15)	7 (12,5)	12 (25.5)	17 (27,4)	.018
	4 to10 years	14 (23.3)	17 (30.4)	17 (36.2)	25 (40.3)	
	More than 10 years	37 (61.7)	32 (57.1)	18 (38.3)	20 (32.3)	
Federated (%)	Yes	53 (88.3)	38 (67.9)	13 (27.7)	51 (82.3)	< .001
	Not	7 (11.7)	18 (32.1)	34 (17.2)	11 (17,7)	
Number of sessions (%)	Until 3 sessions	11 (18.3)	11 (19.6)	19 (40.4)	4 (6.5)	< .001
	Until 4-10 sessions	40 (66.7)	45 (80.4)	27 (57.4)	49 (75)	
	More than 10 sessions	9 (15)	0 (0)	1 (2.1)	9 (14.5)	
Duration of sessions in minutes		93.83 (27.71)	109.11 (33.64)	62.66 (20.82)	86.85 (28.96)	< .001
Mean (SD)						
Personal trainer (%)	Yes	45 (75)	15 (26.8)	17 (36.2)	28 (45.2)	< .001
	Not	15 (25)	41 (73.2)	30 (63.8)	34 (54.8)	
	Less than 40 %	3 (5)	2 (3.6)	2 (4.3)	1 (1.6)	.072
	40-59 %	12 (20)	4 (7.1)	15 (31.9)	8 (12.9)	
	60-79 %	33 (55)	31 (55.4)	19 (40.4)	32 (51.6)	

80- 100 %	12 (20)	19 (33.9)	11 (23.4)	21 (33.9)
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Table 2 shows the results obtained from the EDS-R, BSQ, BREQ-3 and BIAQ questionnaires corresponding to each of the analysed sport modalities. Being analysed the EDS-R, the cyclists are those who present higher score, but without significant differences with respect to the rest of sports. Yes, there are significant differences in the time of exercise in relation to the triathletes against the athletes and at the same time the triathletes with respect to the swimmers. There are no significant differences among the different sports modalities in the BSQ total scores. However, we do find significant differences in the BREQ-3. Specifically, in the higher intrinsic regulation in cyclists than in athletes and even more in cyclists in comparison to swimmers; integrated regulation being in triathletes greater than in swimmers; in identified regulation obtaining a higher score cyclists against swimmers; and external regulation being higher in swimmers compared to cyclists.

Conducting a study by sex in endurance sports there were significant differences ($t(223) = 5.384$, $p < .001$; $d = .78$) in the BSQ obtaining higher score in women ($M = 71.16 \pm 23.11$) than in men ($M = 53.8 \pm 21.35$), in the BIAQ ($t(223) = 3.790$, $p < .001$; $d = .46$) being also higher in women ($M = 1.92 \pm .39$) than in men ($M = 1.71 \pm .51$) and also in the clothing mode dimension ($t(223) = 2.332$, $p = .021$; $d = .34$) obtaining a higher score for the female sex ($M = 1.75 \pm .51$) with respect to the male ($M = 1.59 \pm .44$). Significant differences were also found ($t(223) = 7.022$, $p < .01$, $d = 1.00$) in the BMI; being in this case greater the BMI in men ($M = 23.19 \pm 2.33$) than in women ($M = 21.04 \pm 1.93$).

Table 2. Descriptive statistics of the DPE, BI, motivation and behaviours towards the BI.

		Swimming Mean (SD) n= 60	Cycling Mean (SD) n= 62	Athletics Mean (SD) n= 47	Triathlon Mean (SD) n= 62	F	p- value	Post-hoc analysis
Physical exercise dependence.	Withdrawal	8.57 (3.98)	8.43 (3.72)	8.08 (3.69)	7.98 (3.86)	.305	.822	
	Continuance	7.38 (3.17)	6.79 (3.34)	6.81 (3.35)	7.03 (3.64)	.381	.767	
	Tolerance	10.03 (3.52)	11.09 (3.96)	9.97 (4.25)	10.40 (4.50)	.918	.433	
	Lack of control	7.50 (3.47)	8.14 (3.56)	7.38 (3.73)	7.82 (3.37)	.509	.677	
	Reduction of activities	6.45 (2.73)	6.64 (2.87)	5.83 (2.88)	6.45 (2.87)	.775	.509	
	Exercise time	10.03 (3.99)	10.63 (4.07)	8.87 (3.57)	11.95 (3.32)	6.374	<.001	T>A**. T>S*
	Intention effects	7.15 (3.46)	7.64 (3.50)	6.81 (3.81)	6.94 (2.66)	.652	.583	
Total EDS-R	57.12 (16.93)	59.36 (19.17)	53.77 (20.13)	58.58 (16.49)	.943	.421		
Body dissatisfaction	Total BSQ	66.60 (28.10)	55.84 (21.13)	58.38 (23.58)	58.97 (23.35)	2.260	.082	
Motivation	Intrinsic regulation	3,42 (.59)	3,72 (.35)	3,47 (.54)	3,63 (.42)	4.766	.002	C>A*. C>S**

	Integrated regulation	3.50 (.57)	3.69 (.47)	3.59 (.47)	3.59 (.56)	3.222	.027	T>S*
	Identified regulation	3.77 (.52)	3.66 (.47)	3.59 (.47)	3.59 (.56)	3.662	.013	C>S*
	Introjected regulation	1.32 (.82)	1.29 (.81)	1.19 (.92)	1.27 (.87)	.227	.878	
	External regulation	.34 (.53)	.21 (.52)	.20 (.47)	.09 (.24)	2.987	.009	S>T*
	Amotivation	.42 (.55)	.26 (.58)	.19 (.51)	.23 (.46)	1.960	.121	
Avoidance behaviours of the body image	Clothing	1.75 (.46)	1.59 (.47)	1.70 (.54)	1.56 (.42)	2.171	.092	
	Social activities	1.13 (.42)	1.14 (.44)	1.19 (.46)	1.09 (.28)	.601	.615	
	Eating restraint	1.81 (.77)	1.85 (.75)	1.78 (.74)	1.85 (.57)	.140	.936	
	Checking behaviour/ grooming and weighing	2.59 (.64)	2.65 (.78)	2.46 (.74)	2.46 (.57)	1.114	.344	
	Total BIAQ	1.85 (.38)	1.77 (.43)	1.79 (.46)	1.74 (.34)	.906	.439	

In addition, the differences among sports by sex were observed through the results obtained in the EDS-R, BSQ, BREQ-3 and BIAQ. In the male sex, significant differences were found in the intrinsic regulation ($F(3, 141) = 3.886; p < .01$) where the cyclists obtained higher score ($M = 3.73 \pm .36$) than the swimmers ($M = 3.37 \pm .52$), in the same way the cyclists ($M = 3.66 \pm .49$) obtained higher score than swimmers ($M = 3.31 \pm .55$) in the identified regulation ($F(3, 141) = 2.729, p = .029$); Regarding exercise time ($F(3, 141) = 4.272, p < .01$) triathletes were ($M = 11.85 \pm 3.20$) who obtained the highest score with respect to athletes ($M = 9.13 \pm .65$) with $p = .012$, and with respect to swimmers ($M = 9.36 \pm .61$) with a significance of $p = .017$. Finally, significant differences were also found ($F(3, 75.056) = 3.099, p < .01$) in the BMI between triathletes ($M = 22.71 \pm 1.63$) and swimmers ($M = 24.36 \pm 3.05$) with a significance of $p = .028$ and even greater in relation to cyclists ($M = 22.66 \pm 2.18$) and swimmers ($p = .036$). On the other hand, in the feminine gender significant differences were only found in the Integrated Regulation ($F(3, 39.075) = 4.368, p = .01$) being higher in cyclists ($M = 3.89 \pm .18$) than in swimmers ($M = 3.54 \pm .57$) with a significance of $p = .044$, in demotivation ($F(3, 38.267) = 3.915; p = .016$) being higher in swimmers ($M = .45 \pm .59$) than in cyclists ($M = .06 \pm .17$) whose significance was $p = .021$. Significant difference was also found ($F(3, 76) = 2.954, p = .038$) in the practice time, the score being higher in triathletes ($M = 12.13 \pm 3.58$) than in athletes ($M = 8.41 \pm 3.62$) where $p = .025$.

Table 3 shows the correlations between the values of the DPE, BI, motivation, BIAQ, BMI, age, federated and average duration of the training sessions. The DPE and the BI correlate significantly ($p < .01$) among them. On the one hand, the DPE correlates significantly with age ($p < .01$), duration of sessions ($p < .01$), number of sessions ($p < .01$), integrated regulation ($p < .05$), introjected regulation ($p < .01$), external regulation ($p < .01$), demotivation ($p < .01$) and tendency of behaviour towards the avoidance of Body Image, BIAQ, ($p < .01$). In addition, it correlates with the dimensions of the BIAQ, way of wearing clothes ($p < .01$), attitudes in social activities ($p < .01$), food restriction ($p < .01$) and checking behaviours ($p < .01$). In relation to BI, it correlates significantly with sex ($p < .01$),

intrinsic regulation ($p < .05$), introjected regulation ($p < .01$), external regulation ($p < .01$), demotivation ($p < .01$) and tendency of behaviours towards the avoidance of body image, BIAQ, ($p < .01$). In addition, it correlates with the dimensions of the BIAQ, way of wearing clothes ($p < .01$), attitudes in social activities ($p < .01$), food restriction ($p < .01$) and checking behaviours ($p < .01$).

Table 3. Pearson correlations between the DPE, BI, motivation, age, BMI, duration of training and behaviour towards the avoidance of BI.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of sessions (A)	1	.211(**)	-.297(**)	.076	.106	.188(**)	-.084	.076	.041	.065	.069	.272(**)	-.114	.057
Duration of sessions (B)		1	-.213(**)	.028	.115	.059	.054	.059	.009	-.009	.019	.252(**)	-.112	.059
Age (C)			1	-.126	.039	.018	.183(**)	-.134(*)	-.137(*)	-.070	-.129	-.304(**)	.284(**)	-.144(*)
Gender (D)				1	.048	.097	.071	.032	-.042	-.011	.339(**)	.055	-.426(**)	.246(**)
Intrinsic regulation (E)					1	.433(**)	.344(**)	-.090	-.314(**)	-.167(*)	.157(*)	.063	-.082	-.204(**)
Integrated regulation (F)						1	.374(**)	.014	-.245(**)	-.205(**)	-.017	.158(*)	-.112	-.096
Identified regulation (G)							1	.021	-.124	-.220(**)	-.007	.012	-.016	-.113
Introjected regulation (H)								1	.419(**)	.186(**)	.396(**)	.484(**)	.098	.303(**)
External regulation (I)									1	.480(**)	.303(**)	.206(**)	.013	.327(**)
Amotivation (J)										1	.211(**)	.166(*)	.027	.253(**)
Total BSQ (K)											1	.349(**)	.118	.603(**)
Total EDSR (L)												1	.014	.412(**)
BMI (M)													1	.091
Total BIAQ (N)														1

By performing the same correlations, but segmented by sex, the following results were obtained, in the male gender the EDS-R and the BSQ correlated significantly ($r = .312$; $p < .01$). In men, DPE and BI correlate ($r = .312$; $p < .01$). On its behalf, the DPE correlated with the number of sessions ($r = .212$; $p < .05$), age ($r = -.293$; $p < .01$), introjected regulation ($r = .514$; $p < .01$), external regulation ($r =$

.289; $p < .01$) and the tendency to negative conducts with Body Image ($r = .351$; $p < .01$). In relation to the dimensions of the BIAQ, it correlated with the way of wearing clothes ($r = .347$; $p < .01$), attitudes in social activities ($r = .2301$; $p < .01$), food restriction ($r = .201$; $p < .01$) and checking behaviours ($r = .265$; $p < .01$). The IC correlated with the introjected regulation ($r = .510$; $p < .01$), external regulation ($r = .489$; $p < .01$), the demotivation ($r = .214$; $p < .01$), the BMI ($r = .393$; $p < .01$) and the tendency of behaviours towards Body Image ($r = .553$; $p < .01$). The BI also correlated with the dimensions of the BIAQ, mode of wearing clothes ($r = .429$; $p < .01$), attitudes in social activities ($r = .333$; $p < .01$), food restriction ($r = .481$; $p < .01$) and checking behaviours ($r = .413$; $p < .01$). In females, DPE also correlated with HF ($r = .404$; $p < .01$) significantly. On the one hand, the BI correlated with the intrinsic regulation ($r = -.300$; $p < .01$), introjected regulation ($r = .252$; $p < .05$), demotivation ($r = .254$; $p < .05$) and the tendency to negative conducts in relation to Body Image ($r = .601$; $p < .01$). In addition, it correlates with the dimensions of the BIAQ, way of wearing clothes ($r = .519$; $p < .01$), attitudes in social activities ($r = .242$; $p < .01$), food restriction ($r = .477$; $p < .01$) and checking behaviours ($r = .513$; $p < .01$). The DPE correlated with the number of sessions ($r = .386$; $p < .01$), age ($r = -.311$; $p < .01$), duration of sessions ($r = .450$; $p < .01$) introjected regulation ($r = .440$; $p < .01$) and the tendency to negative conducts with Body Image, BIAQ, ($r = .509$; $p < .01$). In addition, it correlates with the dimensions of the BIAQ, way of wearing clothes ($r = .385$; $p < .01$), attitudes in social activities ($r = .377$; $p < .01$), food restriction ($r = .428$; $p < .01$) and checking behaviours ($r = .316$; $p < .01$).

Table 4 and 5 show the linear regression of the factors that predict the BI and the DPE respectively. As a common predictive factor, we find the introjected regulation and the tendency to negative conducts to Body Image.

Table 4. Linear regression among the predictive factors of HF.

	Not standardized coefficient		Standardized coefficient	T	p-value	95% Confidence Interval for B	
	B	Standard error	Beta			B	Standard error
(Constant)	-9,231	11,513		-,802	,424	-31,925	13,462
Gender	13,243	2,916	,259	4,542	,000	7,495	18,992
Intrinsic regulation	-1,669	2,643	-,034	-,632	,528	-6,878	3,540
Introjected regulation	5,809	1,753	,201	3,314	,001	2,354	9,264
External regulation	3,655	3,398	,068	1,076	,283	-3,043	10,352
Amotivation	2,006	2,629	,043	,763	,446	-3,176	7,188
PED	,051	,083	,038	,622	,534	-,111	,214
Clothing	6,459	8,006	,124	,807	,421	-9,321	22,240
Social activities	-1,023	4,983	-,017	-,205	,837	-10,845	8,798
Eating restraint	8,853	3,527	,254	2,510	,013	1,900	15,805
Checking behaviour/ grooming and weighing	7,115	3,406	,198	2,089	,038	,401	13,830
Total BIAQ	1,019	16,871	,017	,060	,952	-32,237	34,275

R2	.497	.471
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Table 5. Linear regression among the predictive factors of DPE.

	Not standardized		Standardized		95% Confidence Interval		
	coefficient		coefficient		for B		
	B	Standard error	Beta	T	p-value	B	Standard error
(Constant)	1,349	13,775		,098	,922	-25,806	28,503
Number of sessions	4,031	1,940	,116	2,078	,039	,208	7,855
Duration of sessions (mean)	,085	,030	,152	2,849	,005	,026	,143
Age	-,328	,101	-,190	-3,243	,001	-,527	-,129
Integrated regulation	4,888	2,052	,132	2,383	,018	,844	8,933
Introjected regulation	7,919	1,275	,372	6,209	,000	5,405	10,433
External regulation	-3,688	2,589	-,094	-1,425	,156	-8,791	1,415
Amotivation	1,199	2,037	,035	,589	,557	-2,816	5,214
BMI	,153	,417	,021	,368	,714	-,669	,976
Clothing	8,750	5,796	,229	1,510	,133	-2,676	20,177
Social activities	10,864	3,584	,240	3,031	,003	3,799	17,928
Eating restraint	5,661	2,603	,220	2,175	,031	,530	10,793
Checking behaviour/ grooming and weighing	2,519	2,453	,095	1,027	,306	-2,317	7,355
Total BIAQ	-13,194	11,732	-,293	-1,125	,262	-36,321	9,932
Total BSQ	,025	,050	,033	,488	,626	-,075	,124
R2	.463	.427					

4. Discussion

First of all, we have to mention the scarce literature found about the relationship among our different variables, including the variety of instruments that are used for their study, making the results of the different studies differ among them, as well as the conceptual problems to define addiction to sport. Therefore, we must be cautious in the discussion with other investigations in relation to our study.

The first objective was to study the sociodemographic differences that could exist among the different studied individual sports. There are not many studies that have investigated it, however, Latorre et al. [24], agree that triathletes are the ones who in greatest number federate and perform the most sessions a week, although our study also reveals that swimmers have a similar percentage in both cases. Likewise, it coincides with the cyclists in the duration of the sessions. Similarly, in their study there are significant differences in the BMI, with the runners having the lowest BMI. Finally, there are also differences in the total of the sample and in all sports, except in swimming, with respect to BMI being higher in men than in women.

The second objective of this study was to analyse the DPE and the BI. Sussman et al. [35], observed that the DPE in the general population of the USA was between 3% and 5%. Reche et al. [36], with university students obtained as a result that there was a DPE in 8% in individual sports. For Harris et al. [37], it was between 16% and 36% depending on which degree they studied. Studies like those of Latorre et al. [24], show that in individual sports there is a DPE of 13.6%, existing significant differences among different sports, being the triathlon the largest with 29.6% as opposed to our study where swimmers (10%) have had the highest DPE. Magee, Buchanan and Barrie [38], and Valenzuela and Arriba-Palomero [39], obtained an RD of 8.6% in a study with male triathletes, while Blaydon and Linder (2002) [13], analysed the triathletes showing between 25-30% symptoms of sport addiction, the same way as Youngman and Simpson [40], who obtained that approximately 20% of the triathletes were at risk of sport addiction.

Taking into account the comparison of sexes, there are several studies and conflicts among them. Ruiz-Juan, Zarauz and Flores-Allende [41], studied the Negative Addiction to Running (ANC) in endurance runners (half marathon and marathon) finding a mean score higher than the mean without significant differences between sexes. Like Ortiz and Arbinaga [42], and González-Cutre and Sicilia [17], in a study with individual sports and conditioning centre they did not find significant differences in the DPE in relation to sex, as Modolo et al. [20], where they obtained that 28% of women and 38% of men had DPE symptoms without finding significant differences. Bingol and Bayansalduz [43], concluded that 19.2% of women and 13.15% of men suffered RD in a multitude of studied sports. Mayolas-Pi et al. [44], in a study with cyclists (female and male) showed that 17% of men and 16% of women were at risk of sport addiction. We have found a few studies with significant difference in DPE being higher in women than our results have been.

In the study of DPE and its dimensions compared to each sport modality Latorre et al. [24], found differences in the total score being higher in triathletes and cyclists than in runners, a fact that did not result in our study. However, there were coincidences in the time dimension of exercise being higher in triathletes than in athletes, although in our study it was also reflected with triathletes greater than swimmers. Likewise, Harris et al. [37], conducted a study with university students where differences were found in the subscale "exercise time" among students of Sports Science and other university degrees.

Like our research, Ortiz and Arbinaga (2016) [42] did not find significant differences in the subscales of the EDS-R comparing the two sexes. However, Gonzalez-Cutre and Sicilia [17] in fitness centres did find significant differences between men and women in all the subscales of the DPE, being higher in the male sex, except for the abstinence factor. It is important to note that the sample in Ortiz and Arbinaga [42] was much smaller.

As far as BI is concerned and its relation to sport, in this case individual sports, Fortes, Almeida and Ferreira [45], obtained results where almost 15% suffered BI tendencies in various sport modalities, being inferior to this study, and even more in comparison to swimmers. Latorre et al. [24], found a higher prevalence of BI of 16.3%, with swimmers having the highest BI with 22.6%, obtaining similar results to those of our study. Regarding the study of HF among athletes analysing the comparison by sex, there are many studies that confirm that women suffer greater HF than men (Zanon et al., [46] Zmijewski and Howard [19]). All this is supported in our study with the conduct of body image avoidance (BIAQ).

In the association of these two variables there is also a significant relationship as we have seen it in the results in agreement with other studies where there is a strong association between DPE and BI (Davis [47], Cook and Hausenblas [14], Weinstein and Weinstein [15]).]; Zmijewski and Howard [19]) in a study with university students of Physical Activity and Sports Sciences concludes that girls with a higher score in the DPE showed higher scores in the BI, while in boys this did not happen, confirming the significant differences that we found in our study regarding greater HF in women than in men. Hausenblas and Fallen (2002) [7], even obtain as a result that at a general level the subscale of lack of control predicted the BI. These same authors, in men, the intention subscale and time of exercise were predictors of BI.

The next objective was to establish the relationship between the DPE and the BI in relation to the motivation, in particular with the regulation conducts of motivation.

In this regard, several studies have linked introjected regulation as a major predictor of DPE (Edmunds, Ntoumanis and Duda [48], Fortier and Farrell [49]). On the other hand, González-Cutre and Sicilia [50], established in their study that not only was DPE related to non-self-determined motivations such as external and introjected regulation, but also to some self-determined motivation such as integrated regulation. Our study coincides with its results adding demotivation as a factor that prevails in the DPE. These authors conclude that the positive or negative character of a high DPE could be in how the person constitutes their behaviours within their lifestyle. Latorre et al. [24], find the integrated, identified, and introjected regulation as associated factors to the DPE.

Zarauz, Ruiz-Juan and Arbinaga [51] studied the sport addiction and the running compromise (EAG) in athletes and they found that in females scoring high in two self-determined motivations (psychological and life – self-esteem objectives) predicted the EAG. However, in males, the EAG could be predicted in a significant way by its high scores in the three more self-determined motivations and lower scores in the non-self-determined motivations.

Sicilia et al. [52] indicate that the practice of exercise in a multitude of occasions comes preceded by external, internalised or not pressure by the people, that takes them to do exercise to lose body weight and maintain a good body image. Regarding this, Latorre et al. [24], obtained that only the introjected regulation is associated with BI. On the other hand, in our study they were the three non-self-determined regulations (introjected, external and demotivation) as a negative association with the intrinsic regulation.

However, although the physical and health motivations can be associated with the positive consequences of physical exercise for people who have a low body dissatisfaction, greater support for the motivations of both physical fitness and health, like appearance and weight, are associated with a higher dissatisfaction of the state body in women, categorised as high dissatisfied body (Sampasa-Kanyinga et al. [53]).

In the same way, Gonzalez-Cutre and Sicilia [17], include the integrated regulation and external regulation as predictors of the DPE, coinciding in this study only with the integrated regulation, being Latorre et al. [24], the identified regulation what predicts the DEP. According to other variables, a multitude of studies and instruments have found that the prevalence in sport addiction decreases with the age, so it correlates inversely (Szabo [54]; Ruiz-Juan, Zarauz y Arbinaga [55]; Costa et al. [56]). Besides it, in our study the number of sessions and the duration of them (Reche et al. [36]; Reche and Gomez [57]) were related to the DEP.

There are studies that make reference not only to the training or the duration itself, but also to the fact that there are differences in relation to the tests that are carried out (Guszkowska and Rudnicki [25]). It is not the same to prepare a sprint as an ironman in a triathlon (Youngman and Simpson [40]), or a half marathon as a marathon (Ruiz-Juan et al. 2016). It was also a predictor of the DPE finding an inversely significant relationship with the age (Latorre et al. [24]). Social activities were one of the conducts that prevail the DPE. As to the BI, in addition to the previously mentioned, it was obtained as a result that sex is an associated factor to the CI. In this way, it coincides with our study, where the sex is an important factor in the BI (Harris et al. [37]; Hausenblas and Fallon [7]).

To know which variables or factors predicted the DPE and the BI showed by the analysis of multiple linear regression, it was the introjected regulation that predicted them as equal as in other studies (Latorre et al. [24]). In any of the analysed studies was a comparison carried out with the conducts of avoidance, being predictor the food restriction in our study for both variables.

The biggest difficulty of this study was to find women who practiced or competed in cycling. In addition to it was to underestimate the data collection, since I thought it would be easier to perform. Another important aspect to take into account in the sociodemographic analysis is not only the occupation, but the working hours per week, as well as the family burden, since having children or not is an important factor. Another important limitation is the great distances and kilometres made to get the sample, all of which was paid by me, including a larger investment of time. Finally, and in relation to the questionnaires, the extension of them was highlighted, especially in the BSQ questionnaire where most of the participants issued a complaint of being too long, this led some questionnaires to be considered as experimental death for not being completely completed.

5. Conclusions

Once having studied the literature, many authors have come to the conclusion that the increase in social relationships, economic stability, type of job, but especially weight loss, feeling better with your body, pleasure, achieving motivating challenges or achievements are the main factors that lead to a continuity in training or exercising, that is, physical and psychic components.

But this practice of exercise can become a problem or even an addiction, which not only has an effect on loss of control, abstinence or reduction of time in other activities, but also refers to body image or food behaviours in a negative way. In view of our results we have observed how 8.5% was declared in RD, but ascending up to 48.4% the AND, whose subjects in many cases had a score higher than 5 in two dimensions or total scores of the EDS-R much higher than the average. This makes us see that in this group many of them can be in danger of DR, without being very different between women and men. In our study the RD has been greater in women, standing out in swimmers being in 1 out of 4.

In addition, we can conclude that in the analysed individual athletes does not exist a great BI, but we must take into account the difference between HF in men and women, a fact that many studies have corroborated in all types of people (athletes or not athletes).

In our study, it was found that there are several validated instruments for the DPE not giving the same results or even results that differ among them even researchers using the same instruments, which makes us see that perhaps the addiction manifests itself in different ways and the context in which the investigation is carried out must be taken into account.

Finally, we have seen in our study how DPE and BI correlate each other, and both can be preceded by a high motivation that is not self-determined, highlighting intrinsic regulation as a predictor of both. Together with this regulation, food restriction is the other predictor variable found between the two variables, existing scarce literature that studies these conducts of avoidance in relation to the DPE.

All this, together with the number of studies that have been done, shows us how we can identify the profile of endurance athletes, in order to create strategies to prevent and treat (in its case) addiction in sports.

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