



Original

Artículo inglés

## Spanish high level handicapped sportsmen and eating disorders: are they at risk?.

### Deportistas paralímpicos españoles y trastornos de la alimentación: ¿están en riesgo?.

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#### Abstract

**Background:** Eating disorders have an important effect on health and sport performance. Nevertheless, it is not clear whether the sport practice acts as a risk factor or a protective factor for eating disorders.

**Aim:** To examine the risk of eating disorders in Spanish disabled high level sportsmen and sportswomen.

**Methods:** The Eating Attitudes Test-26 (EAT-26) was performed in 60 physical or visual disabled subjects who belonged to Paralympics or Promising youngster teams.

**Results:** Low rates for eating disorders risk were found. Only one subject was considered at risk. Multiple regressions análisis performed with the complete sample revealed no associations between gender, type of handicap, and sport category and EAT-26.

**Conclusion:** Controlling gender effect, visual impairment was related to EAT-26 score in women.

#### KEYWORDS

EAT-26, disabled athletes, Paralympics.

#### Resumen

**Introducción:** Los trastornos de la alimentación tienen una importante repercusión tanto en la salud como en el rendimiento deportivo. Sin embargo, no está claro si el ambiente deportivo actúa como factor de riesgo o como protector frente a estas patologías.

**Objetivo:** Valorar el riesgo de trastornos de la alimentación en una muestra de deportistas españoles de alto nivel con discapacidad.

**Métodos:** Se entrevistó con el Eating Attitudes Test-26 (EAT-26) a 60 participantes con discapacidad física o visual y que pertenecían al equipo paralímpico español y al equipo de promesas paralímpicas.

**Resultados:** Se encontraron bajas tasas de riesgo de trastornos de la conducta alimentaria. Del conjunto de individuos analizados, un sujeto obtuvo puntuación suficiente para considerar que se encontraba en riesgo. Análisis de regresión múltiple no mostraron asociación entre género, tipo de discapacidad o categoría deportiva y EAT-26.

**Conclusión:** Controlando el efecto del género, la discapacidad visual se relacionó con la puntuación obtenida en EAT-26 en mujeres.

#### PALABRAS CLAVE

EAT-26, deportistas discapacitados, paralímpicos.

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## Contribution to scientific literature:

Nutritional status is very important to sport performance and to sportsmen and sportswomen health. Sometimes, eating disorders are associated with sport practice, which can deteriorate their nutritional status. Nevertheless, little is known about eating disorders and nutritional status in Paralympics sportsmen and sportswomen. Despite more researches are necessary, this manuscript let researchers and sport professionals learn about factors, as eating disorders, that can compromise Paralympics sportsmen and sportswomen health.

## Introduction:

Physical health, psychosocial health, and sports performance are very influenced by eating disorders (ED) particularly for sportsmen<sup>(1-3)</sup>. Significant caloric restriction reduces metabolic rate, turns into weight loss and causes troubles into the cardiovascular, muscular skeletal, thermoregulatory, and endocrine systems<sup>(4)</sup>. Although characteristic such as dieting and fear of weight gain are common in some sportsmen and ED patients, they are not thought to be similar to ED patients. Indeed, most of anorexic behaviours are not really pathological in the context of sport practice itself. These characteristics, such as excessive exercising and the willingness to rigidly control weight, may be in part responsible for their success and they are often considered as a sign of quality or professionalism of sportsmen<sup>(5)</sup>.

Sport environment can act as a risk factor or a protective factor for disordered eating development. The existing results are inconsistent and vary according to the level of performance, type of sport and the research<sup>(6-8)</sup>. Sometimes, it has been seen than non sportsmen held significantly more pathological attitudes about their nourishment than sportsmen<sup>(9)</sup>. Other investigations reveal that sportsmen's risk of ED is higher than in non sportsmen controls<sup>(10,11)</sup>. In the USA National Collegiate Athletic Association (NCAA) Division I, approximately 13% of people sampled, suffered from problems with eating and body image perception issues. Nevertheless, very low rates of diagnosable eating disorders were found (0-1.1%)<sup>(12)</sup>.

The aim of this study was to examine the risk of eating disorders in a sample of Spanish disabled high level sportsmen and sportswomen and to analyze its relationship with gender, sport categories, and type of disability.

## Subjects and Methods:

### Participants

Initial sample consisted of 120 disabled high level Spanish sportsmen and sportswomen, but to work with a more homogenous sample, only swimmers, athletes, and footballers, and physical disabled or visually impaired were used. Therefore the final sample included 81 individuals (22 female / 27.2%). The sample is described in table 1. Male mean age was  $25.71 \pm 8.785$  years while female's was  $19.77 \pm 5.345$  years ( $t = 3.679$ ;  $df = 61.884$ ;  $p < 0.001$ ).

Table 1: Sample description			
	Paralympics N(%)	Promising youngster N(%)	Total N(%)
Swimmers			
Visual disabled			
Male	8(9.9)	2(2.5)	10(12.3)
Female	5(6.2)	1(1.2)	6(7.4)
Physical disabled			
Male	18(22.2)	6(7.4)	24(29.6)
Female	7(8.6)	4(4.9)	11(13.6)
Athletes			
Visual disabled			
Male	10(12.3)	4(4.9)	14(17.3)
Female	3(3.7)	2(2.5)	5(6.2)
Physical disabled			
Male	1(1.2)	1(1.2)	2(2.5)
Female	0(0.0)	0(0.0)	0(0.0)
Footballers			
Visual disabled			
Male	9(11.1)	0(0.0)	9(11.1)
Total	61(75.3)	20(24.7)	81(100.0)

With institutional ethical approval, all participants agreed to participate in the research and signed the consent form before participating in this study which is adhered to the Declaration of Helsinki.

## Procedure and Measures

The data were collected in Centros de Alto Rendimiento (CAR) (National High Performance Centres), and in meetings during Spanish Championships since August 2010 to August 2012. Participants were interviewed by trained researchers. They were asked about daily food, lifestyles, and socioeconomics variables. In addition, Eating Attitudes Test-26 (EAT-26) with modifications by González Montero de Espinosa & Marrodán was administered in order to examine their eating disorders risk<sup>(13,14)</sup>. The EAT-26 is a questionnaire consisting of 26 items. Each item can have a maximum value of 3 (risk) and a minimum value of 0 (no risk). Their sum can assess the risk of ED. EAT-26 values above 20 are considered as a risk of ED as Garner et al. established<sup>(13)</sup>.

Data collected were used to create an anonymous database which was analyzed with the SPSS 21.0 software. Because of the small size of the sample non parametric bivariate test were used to analyse differences between groups: U-Mann-Whitney, non parametric  $\chi^2$  (likelihood ratio) and ANOVA. Multiple regressions were used as well.

## Results:

Description of answers to the EAT-26 questionnaire is shown in table 2. Statements with higher response rate to ED risk were "Think about burning up calories when I exercise" (always = 12.3%), "I am preoccupied with the thought of having fat on my body" (always = 11.1%), "Engage in dieting behaviours" (always = 7.4%), "Aware of the caloric content of foods that I eat" (always = 7.4%), "Find myself preoccupied with food" (always = 7.4%), and "Enjoy trying new rich foods" (never = 7.4%). On the other hand, statements with higher response rate to low ED risk were "Vomit after I have eaten" (never = 98.8%), "Have the impulse to vomit after meals" (never = 93.7%), and "Like my stomach to be empty" (never = 91.4%).

Table 2: EAT-26 response distributions

	Never	Rarely	Sometimes	Often	Usually	Always
	N(%)	N(%)	N(%)	N(%)	N(%)	N(%)
<b>Factor I. Dieting</b>						
Engage in dieting behaviours	50(61.7)	7(8.6)	14(17.3)	0(0.0)	4(4.9)	6(7.4)
Eat diet foods	53(66.3)	10(12.5)	11(13.8)	1(1.3)	3(3.8)	2(2.5)
Feel uncomfortable after eating sweets	60(74.1)	9(11.1)	10(12.3)	0(0.0)	1(1.2)	1(1.2)
Avoid food with sugar in them	38(46.9)	9(11.1)	17(21.0)	7(8.6)	7(8.6)	3(3.7)
Particularly avoid foods with high carbohydrate content	51(63.0)	8(9.9)	13(16.0)	5(6.2)	4(4.9)	0(0.0)
Am preoccupied with a desire to be thinner	52(64.2)	7(8.6)	14(17.3)	2(2.5)	3(3.7)	3(3.7)
Like my stomach to be empty	74(91.4)	4(4.9)	3(3.7)	0(0.0)	0(0.0)	0(0.0)
Think about burning up calories when I exercise	48(59.3)	7(8.6)	9(11.1)	3(3.7)	4(4.9)	10(12.3)
Feel extremely guilty after eating	68(84.0)	5(6.2)	8(9.9)	0(0.0)	0(0.0)	0(0.0)
Am preoccupied with the thought of having fat on my body	35(43.2)	8(9.9)	15(18.5)	6(7.4)	8(9.9)	9(11.1)
Aware of the caloric content of foods that I eat	40(49.4)	5(6.2)	17(21.0)	5(6.2)	8(9.9)	6(7.4)
Enjoy trying new rich foods (reverse score)	6(7.4)	9(11.1)	17(21.0)	1(1.2)	16(19.8)	32(39.5)
Like eating with other people(reverse score)	2(2.6)	0(0.0)	5(6.4)	5(6.4)	21(26.9)	45(57.7)
<b>Factor II. Bulimic behaviours and concern for food</b>						
Have the impulse to vomit after meals	74(93.7)	3(3.8)	2(2.5)	0(0.0)	0(0.0)	0(0.0)
Vomit after I have eaten	79(98.8)	0(0.0)	1(1.2)	0(0.0)	0(0.0)	0(0.0)
Have gone on eating bingers where I feel that I may not be able to stop	58(71.6)	10(12.3)	12(14.8)	1(1.2)	0(0.0)	0(0.0)
Give too much time and thought to food	59(72.8)	7(8.6)	10(12.3)	3(3.7)	2(2.5)	0(0.0)
Find myself preoccupied with food	31(38.3)	8(9.9)	12(14.8)	15(18.5)	9(11.1)	6(7.4)
Feel that food controls my life	65(80.2)	7(8.6)	2(2.5)	1(1.2)	4(4.9)	2(2.5)
<b>Factor III. Oral control</b>						
Cut my food into small pieces	49(60.5)	7(8.6)	9(11.1)	2(2.5)	10(12.3)	4(4.9)
Take longer than others to eat meals	52(64.2)	10(12.3)	10(12.3)	0(0.0)	7(8.6)	2(2.5)
Other people think that I am too thin	54(67.5)	11(13.8)	9(11.1)	2(2.5)	2(2.5)	2(2.5)
Feel that others would prefer if I ate more	55(67.9)	7(8.6)	9(11.1)	2(2.5)	3(3.7)	5(6.2)
Feel that others pressure me to eat	72(88.9)	4(4.9)	5(6.2)	0(0.0)	0(0.0)	0(0.0)
Avoid eating when I am hungry	58(71.6)	7(8.6)	13(16.0)	0(0.0)	2(2.5)	1(1.2)
Display self-control around food	27(33.3)	6(7.4)	20(24.7)	7(8.6)	16(19.8)	5(6.2)

The mean value obtained for EAT-26 score was  $6.43 \pm 5.933$  to the all sample, that it is considered a no risk score (Table 3). Statements which contribution was higher to EAT-26 were those related to dieting factor, followed by oral control factor, and by last bulimic behaviours and concern for food factor to the entire sample. There was not statistical difference observed between men or women, physical or visual disabled, or Paralympics team or Promising youngsters team. As it can be seen in Table 4, only one subject was at risk of eating disorders. He was a promising youngster, physically disabled sportsman.

Several multilinear regressions were performed (Table 5) to explore the contribution of gender (0: male – 1: female), type of handicap (0: visual disabled – 1: physical disabled), and sport category (0: Paralympics – 1: Promising youngsters) to EAT-26 score. The percentage of the EAT-26 score variability explained by these three variables was only 3%. No associations between items studied and EAT-26 were found. In order to control gender effect, we split the regression by sex. The model was not significant for males. For women, 30% of observed variability for EAT-26 was explained by type of handicap. A stepwise model was executed and it was found that the sport category was not in the

regression model. According to the model, visual impairment in women was inversely related to EAT-26 score, so the visually impaired sportswomen obtained higher scores to the ED risk than their counterparts with physical disabilities.

Table 3: Description of responses to EAT-26 Factors in disabled sportsmen and sportswomen				
	Dieting X (S.D.)	Bulimic behaviours and concern for food X (S.D.)	Oral control X (S.D.)	Total EAT-26 X (S.D.)
All (N=81)	3.47(3.84)	0.90(1.49)	1.87(2.25)	6.43(5.93)
Gender				
Male (N=59)	3.24(3.817)	0.79(1.319)	2.05(2.395)	6.32(6.056)
Female (N=22)	4.09(3.927)	1.18(1.868)	1.41(1.764)	6.73(5.717)
Statistics (U-Mann-Whitney)	U=544.5 p =0.308	U=610.0 p =0.834	U=541.5 p =0.274	U=618.0 p =0.741
Disabled				
Visual (N=44)	3.42(3.238)	0.95(1.603)	1.82(1.808)	6.50(5.156)
Physical (N=37)	3.54(4.488)	0.83(1.363)	1.94(2.714)	6.35(6.816)
Statistics (U-Mann-Whitney)	U=749.5 p =0.653	U=759.0 p =0.867	U=749.0 p =0.662	U=749.0 p =0.536
Sport Category				
Paralympics team (N=61)	3.42(3.396)	0.93(1.400)	1.98(2.281)	6.56(5.384)
Promising youngster (N=20)	3.65(5.050)	0.80(1.765)	1.55(2.164)	6.05(7.515)
Statistics (U-Mann-Whitney)	U=562.0 p =0.669	U=486.0 p =0.185	U=562.0 p =0.669	U=527.0 p =0.362

Table 4: Percentage of disabled athletes at risk of eating disorders attitudes.			
	No risk N(%)	At risk N(%)	Statistics
All	80(98.8)	1(1.2)	
Gender			
Male	58(98.3)	1(1.7)	LHR=0.638 df=1
Female	22(100.0)	0(0.0)	p =0.424
Disabled			
Visual	44(100.0)	0(0.0)	LHR=1.582 df=1
Physical	36(97.3)	1(2.7)	p =0.208
Sport category			
Paralympics	61(100.0)	0(0.0)	LHR=2.836 df=1
Promising youngster	19(95.0)	1(5.0)	p =0.092

\* LHR: Likelihood ratio

Table 5: Predictive models for EAT-26 (Main category).				
	B	p	Statistics	
a				
Constant	6.494	<0.001	R=0.052	
Gender (Male)	0.465	0.760	R <sup>2</sup> =0.003	
Disabled (Visual)	-0.120	0.929	p =0.976	
Sport category (Paralympics)	-0.541	0.732		
b				
Male				
Constant	5.410	<0.001	R=0.174	
Disabled (Visual)	2.114	0.192	R <sup>2</sup> =0.030	
Sport category (Paralympics)	-0.086	0.964	p =0.422	
Female				
Constant	10.222	<0.001	R=0.567	
Disabled (Visual)	-6.047	0.010	R <sup>2</sup> =0.321	
Sport category (Paralympics)	-1.481	0.523	p =0.025	
c				
Constant	9.818	<0.001	R=0.553	
Disabled (Visual)	-6.182	0.008	R <sup>2</sup> =0.306	
			p =0.008	
Excluded variable		Sport category (Paralympics)	t=-0.650	
			p =0.523	

\* Dependent variable: EAT-26

† a: All sample; b: Controlling gender effect; c: for females by steps.

## Discussion:

This research investigated the ED risk in a sample of disabled high level sportsmen and sportswomen. Only 1.2% of the sample was at risk for ED. These results are similar to those of Peláez-Fernández et al. <sup>(15)</sup> who reviewed epidemiological studies of eating disorders among Spanish population samples since year 1989 to 2010 carried on in different Spanish Communities. Their results show an eating disorder prevalence between 1-5%, similar to our results.

Women showed higher EAT-26 scores without statistical significance. Although women scores in other studies were also higher than men results, score differences between sportsmen and control group for men were higher <sup>(16,17)</sup>. Despite male athletes believe they are more muscular and with greater adiposity than they really are, they feel their actual physique was significantly less muscular than their ideal physique. For this reason, they are split between wanting to gain or lose weight <sup>(18-21)</sup>. Filaire et al. <sup>(22)</sup> note that the prevalence of disordered eating is higher in female than in male sportsmen. Riebl et al. <sup>(17)</sup> shown that EAT-26 components contribution order in male cyclist was dieting, oral control and bulimic behaviours and food preoccupation, as we found in this research.

Some researchers have also studied eating disorders in handicapped people. Past research suggested that it is not clear if different disabilities may increase or decrease body esteem among individuals without eating disorders. Relationship between disability and body esteem is complex and not yet well understood. Individuals with severe mobility-related disability, such as spinal cord injury, cerebral palsy and spina bifida, were more likely to devalue all aspects of their body compared to controls <sup>(23)</sup>. Other investigations have suggested that specific disabilities decrease susceptibility to thin ideal internalization. For example, women with rheumatoid arthritis, which is both disfiguring and physically disabling, felt subjectively less "fat" compared to controls and they reported a lower intensity of weight and body shape <sup>(24)</sup>. Researchs in women with visual impairment suggest that they are more satisfied with their body and are less likely to engage in dieting behaviours than sighted women. This may reflect differences in exposure to visual mass media and subsequent thin ideal internalization <sup>(25,26)</sup>.

Although in our study, physical disabled women obtained lower scores than visual disabled sportswomen, visual impaired individuals shown in our sample was similar between Paralympics team and youth Paralympics team. Lower EAT-26 scores in physical disabled sportswomen may be due to less concern about body image, because of the presence of different morphological characteristics. This 'surprising' results match with some studies in visual disabled and blind adolescents and young people sample which showed high prevalence of weight loss attempts. As Montero & Barroso <sup>(27)</sup> noted in a study of blind or visual disabled children, adolescents and young aged 8-25 years, only 20% of girls and 34% of boys were satisfied with their weight. In addition, 35% of the entire sample had tried to get slim at some point and 48% would have liked to lose weight <sup>(28)</sup>.

The results of this study have certain limitations due to the small sample size. This limitation is inherent in the low presence of athletes with visual and physical disabilities in sport practice of high standing, although Spain is one of the countries with the largest presence of athletes in the Paralympics Games.

In conclusion, although the high level of sport practice may be a risk factor for developing ED, results from the research presented here, prove that this did not occur in Spanish disabled sportsmen while in sportswomen a tendency was seen, especially in visual impaired and blind participants.

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## Conflict of interest:

The authors report no conflict of interest. The authors alone are responsible for the content and writing of the paper.

## References

1. Costarelli V, Stamou D. Emotional intelligence, body image and disordered eating attitudes in combat sports athlete. *J Exerc Sci Fit.* 2009;7:104-11.
2. Currie A, Morse ED. Eating disorders in athletes: managing the risk. *Clin J Sport Med.* 2005;24:871-83.
3. Filaire E, Maso F, Degoutte F, Jouanel P, Lac G. Food restriction, performance, psychological state and lipid values in judo athletes. *Int J Sports Med.* 2001;22:454-59.
4. Miller KK. Mechanisms by which nutritional disorders cause reduced bone mass in adults. *J Womens Health.* 2003;12:145-50.
5. Thompson RA, Sherman RT. "Good athlete" traits and characteristics of anorexia nervosa: Are they similar? *Eat Disord.* 1999;7:181-90.
6. Coelho GMO, Soares EA, Ribeiro BG. Are female athletes at increased risk for disordered eating? *Appetite.* 2010;55:379-87.
7. Smolak L, Murnen SK, Ruble AE. Female athletes and eating problems. A meta-analysis. *Int J Eat Disord.* 2000;27:371-80.
8. Sundgot-Borgen J, Torstveit MK. Aspects of disordered eating continuum in elite high-intensity sports. *Scand J Med Sci Spor.* 2010;20:112-21.

9. DiBartolo PM, Shaffer C. A comparision of females college athletes and nonathletes: Eating disorder symptomatology and psychological well-being. *J Sport Exerc Psychol.* 2002;24:33-41.
10. Sundgot-Borgen J, Torstveit MK. Prevalence of eating disorders in elite athletes is higher than in general population. *Clin J Sport Med.* 2004;14:25-32.
11. Raymond-Barker P, Petroczi A, Quested E. Assessment of nutritional knowledge in female athletes susceptible to the Female Athlete Triad syndrome. *J Occup Med Toxicol.* 2007;2:10. doi:10.1186/1745-6673-2-10.
12. Johnson C, Powers PS, Dick R. Athletes and eating disorders: The National Collegiate Athletic Association Study. *Int J Eat Disord.* 1999;26:179-88.
13. Garner DM, Olmsted MP, Bohr Y, Garfinkel PE. The Eating Attitudes Test: psychometric features and clinical correlates. *Psychol Med.* 1982;12:871-8.
14. González Montero de Espinosa M, Marrodán MD. Técnicas complementarias para la valoración nutricional. En : González Montero de Espinosa M, Marrodán MD , editors. La salud escolar también se mide: Guía práctica para el docente. Madrid: Centro Regional de Innovación y Formación "Las Acacias"; 2007. p. 29- 33.
15. Peláez-Fernández MA, Raich-Escursell RM, Labrador-Encinas FJ. Trastornos de la conducta alimentaria en España: Revisión de estudios epidemiológicos. *Rev Mex Trastor Aliment.* 2010;1:62-75.
16. Hausenblas HA, Caron AV. Eating disorder indices and athletes: an integration. *J Sport Exerc Psychol.* 1999;21:230-58.
17. Riebl SK, Subudhi AW, Broker JP, Schenck K, Berning JR. The prevalence of subclinical eating disorders among male cyclist. *J Am Diet Assoc.* 2007;107:1214-17.
18. Raudenbush B, Meyer B. Muscular dissatisfaction and supplement use among male intercollegiate athletes. *J Sport Exerc Psychol.* 2003;25:161-70.
19. Raudenbush B, Zellner DA. Nobody's satisfied: Effects of abnormal eating behaviours and actual perceived weight status on body image satisfaction in males and females. *J Soc Clin Psychol.* 1997;16:95-110.
20. Furnham A, Badmin N, Sneade I. Body image dissatisfaction: gender differences in eating attitudes, self-esteem, and reasons for exercise. *J Psychol.* 2002;136:581-96.
21. Olivardia R, Pope Jr HG, Borowiecki III JJ, Cohane GH. Biceps and body image: the relationship between muscularity and self-esteem, depression, and eating disorder symptoms. *Psychol Men Masc.* 2004;5:112-20.
22. Filaire E, Rouveix M, Bouget M, Pannafieux C. Prevalence of eating disorders in athletes. *Sci Sport.* 2007;22:135-42.
23. Taleporos G, McCabe MP. The relationship between the severity and duration of physical disability and body esteem. *Psychol Health.* 2005;20:637-50.
24. Ben-Tovim DI, Walker MK. Body image, disfigurement and disability. *J Psychosom Res.* 1995;39:283-91.
25. Ashikali EM, Dittmar H. Body image and restrained eating in blind and sighted women: A preliminary study. *Body Image.* 2010;7:172-5.
26. Baker D, Sivyer R, Towell T. Body image dissatisfaction and eating attitudes in visually impaired women. *Int J Eat Disord.* 1998;24:319-22.
27. Montero P, Barroso A. Perception de l'image corporelle chez les enfants, les adolescents et les jeunes aveugles et handicapes visuels. *Antropo.* 2003;4:35-44.
28. Montero P, Barroso A, Bernis C, Varea C. Dietary habits, nutritional state and body image in blind and visually impaired children, adolescents and young people. *Nutrition.* 2001;17:1012.